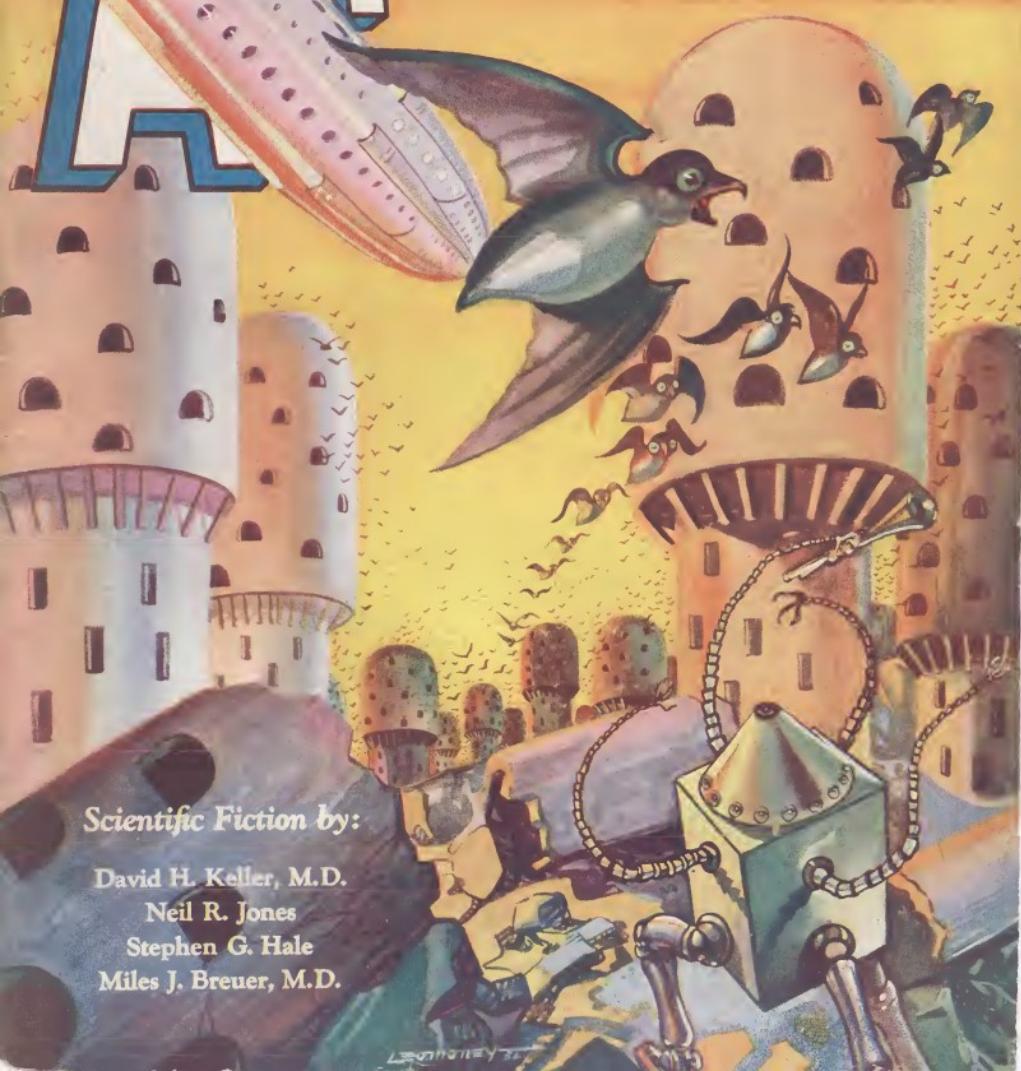


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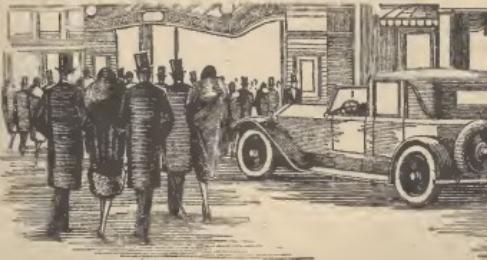
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Try to imagine keeping hot water throughout the house. It's simply impossible. A few of its innumerable uses are illustrated herewith but there are many, many others. Hardly a single one of a housewife's many regular tasks but what requires hot water—plenty of it, and the hotter it is and the quicker you can get it, the better. Right there is one of the biggest reasons for those sensational quick sales and big profits with SUPER-LUX. The moment a housewife sees its sensational speed demonstrated, she visualizes dozens of ways it will help her work and save time. Immediately, she decides she MUST have it—the sale is made in a jiffy and you move on to another just as quick and easy!



"I Couldn't Get The Good Things of Life"

Always outside of things—that's where I was just twelve short months ago. Just now, here in the south, that was all. No theaters, no parties, no good restaurants. No real enjoyment of life. I was just getting by just existing. What a difference today! I drive my own car, have a good bank account, enjoy all the amusement I please.



Then I Quit My Job and "Found" Myself!

HOW does a man go about making more money? If I asked myself that question once, I asked it a hundred times.

I know the answer now. I know the way good money is made, and I'm making it. Gone forever are the days of cheap shoes, cheap clothes, walking home to save carfare. I own a Radio store, and I get almost all the Radio service and repair work in town. The so-called "good things of life" that used to lie in wait for me are now mine.

But—it's just a year ago that I was a poorly paid worker. I was struggling along on a starvation salary until by accident my eyes were opened and I saw just what was the matter with me. Here's how it happened:

I had just popped the question, and Louise said, "Yes!"

Louise wanted to go in and tell her father about it right away, so we did. He sort of grunted when we told him the news, and asked Louise if she left him alone.

"So you and Louise have decided to get married," he said when we were alone. "Well, Bill, just listen to me. I've watched you often here at the house with Louise and I think you are a pretty good, upstanding young fellow. But let me ask you just one question—how much do you make?"

"Twenty-two a week," I told him.

He didn't say a word—just wrote it down on a piece of paper.

"Have you any prospects of a better job or a good raise some time soon?" he asked.

"No, sir; I can't honestly say that I have," I admitted. "I'm looking for something better all the time, though."

"Looking, eh? How do you go about it?"

Well, that question stopped me.

How did I? I was willing to take a better job if I saw the chance all the time—but certainly had no idea to make such a job for myself. When he saw my confusion he grunted. "I thought so," he said. Then he held up some figures he'd been scribbling at.

"I've just been figuring out your family budget, Bill, for a salary of twenty-two a week. I figure you'll need to rent a decent apartment, make your payments on enough plain, inexpensive furniture to fix such an apartment up, pay your electricity, gas, and water bills, buy just about one modest outfit of clothes for both of you once each year. But save nothing for sickness, insurance, and emergencies, and you can't eat. And you'll have to go without

amusements until you can get a good, substantial raise in salary."

"The budget isn't so good, after all," he said, glancing at me; "maybe another one will sound better."

"That's enough, Mr. Sullivan," I said. "Have a heart. I can see things pretty clearly now. Let me go home and think this over."

A Coupon Brought Me Facts I Needed

At home I turned the problem over and over in my mind. Everything Mr. Sullivan had said was gospel truth. I couldn't see anything to do,

Some of the Radio Firms That Have Hired N. R. I. Men

| | |
|--------------------------------------|-------------------------|
| Atester-Kent | Stearns-Warner Corp. |
| American Bosch | Stromberg-Carlson |
| Brunswick | Mfg. Co. |
| Coleman Co. | U. S. Army |
| Cookson Corp. | U. S. Naval Research |
| City of Akron (Police Dept.) | Lab. |
| Dufton Radio Co. | U. S. Coast Guard |
| F. A. D. Andrea Co. | U. S. Dept. of Commerce |
| General Electric Mfg. Co. | Westinghouse Electric |
| Groshy-Grunew Co. | Western Electric Co. |
| Kolster | Zenith Radio Corp. |
| Montgomery Ward & Co. | American Tel. & Tel. |
| National Broadcasting Co. | Thomas A. Edison, Inc. |
| Pan American Airways | Pacific Air Transport |
| Paramount Sound Studio | Broadcasting Stations: |
| Philco-Pillsbury Storage Battery Co. | WRC WPIX |
| Radio Corp. of America | ESL WHAD |
| Radio Corp. of China | WFO WHAM |
| Sears, Roebuck & Co. | WMAQ WENR |
| Silvertown Navigation Co. | WIAJ WFBB |
| Silvers-Carroll, Inc. | WIBOW WKAO |
| Sparton | WICL WXYZ |
| | WJBD WAAM |
| | FMOK WCHS |
| | KWWG WGBI |

any way to turn. But I had to have more money.

I began to thumb the pages of a magazine which lay on the table beside me. Suddenly an advertisement caught my eye. It was an ad for eyes—an advertisement telling of opportunities for trained men to succeed in the great new Radio field. With the advertisement was a coupon offering a free book full of information. I sent the coupon in, and in a few days received a large, 60-page book containing all the latest opportunities in the Radio field, and how a man can prepare quickly and easily at home to take advantage of these opportunities. I read the book carefully, and when I finished it I made my decision.

Now I Own My Own Radio Business

What's happened in the twelve months since that day seems almost like a dream to me now. For eight of those twelve months I've had a Radio business of my own! At first, of course, I started it as a little proposition on the side,

under the guidance of the National Radio Institute, the institution that gave me my Radio training. It wasn't long before I was getting so much work that I quit my fine job that I quit my meagre little clerical job and devoted my full time to my Radio business.

Since that time I've gone right on up, always under the watchful guidance of my friends at the National Radio Institute. They would have given me the money to help me get started, but I wanted to follow some other line of Radio besides building my own retail business, such as broadcasting, manufacturing, experimenting, sea operating, talking movies, operating and servicing, amateur, Radio aircraft, Radio work or any one of the scores of lines they prepare you for. And to think that until the day I sent for their eye-opening book I'd been waiting, "I never had a chance!"

Now I'm making real money. Louise and I have been married six months, and there wasn't any kidding about budgets by Mr. Sullivan when we stepped off, either.

Real Opportunities for You in Radio

You may not be as bad off as I was. But, think it over—are you satisfied? Would you sign a contract to stay where you are now for the next ten years, making the same money? If not, you'd better be doing something about it instead of drifting.

New radio game is a live-wire field of golden rewards. The work in any of the many different lines of Radio is fascinating, absorbing, well paid. The National Radio Institute—please write for its free catalogues. It's in the world—will train you inexpensively in your own home to know Radio from A to Z, and to increase your earnings in the Radio field.

Mail Coupon Now

Take another tip—no matter what your plans are, no matter how much or how little you know about Radio—clip the coupon below and look their free book over. It is filled with interesting facts, figures, and photos, and the information it will give you will be a few minutes anybody's time. You will find yourself under no obligation—the book is free and is gladly sent to anyone who wants to know about Radio. Just address J. E. Smith, President, National Radio Institute, Dept. 2ES, Washington, D.C.

Some of the Jobs N. R. I. Trains Men For

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| Maintenance Man in Broadcast Station | Service Man on Public Address Systems |
| Installation Engineer | Public Address Systems |
| Broadcast Apartments | Retail Stores |
| Operator in Broadcast Station | Service Manager for Retail Stores |
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AMAZING STORIES

Scientific Fiction

Vol. 7

May, 1932

No. 2

JULES VERNE'S TOMBSTONE AT AMIENS
PORTRAYING HIS IMMORTALITY

In Our Next Issue

MASTERS OF THE EARTH, by John Edwards. The idea of interstellar travel, or for that matter, the idea that the moon might be inhabited by some form of intelligent life, does not seem altogether far-fetched any more. Although both are possibilities that may not be confirmed for many a long year, speculations about the scientific aspects of these ideas go on apace. Here is an especially interesting story by an author in H. G. Wells' country that is entirely new and extremely well written.

POLITICS, by Murray Leinster. Politics is the all-pervading topic of conversation nowadays, no matter how you look at it. But Murray Leinster, about whose stories we need to say nothing to readers of AMAZING STORIES, interests himself only with the purely scientific possibilities of the future of politics in the realm of . . . but why tell you more? Mr. Leinster's tale is very vivid and convincing.

A MATTER OF NERVES, by William Lemkin, Ph.D. Of course, the effects produced by the doctor-scientist of this story are not entirely satisfactory, but that's because the doctor's motive was not altruistic. We can think of several ways in which this "reversal" invention could be applied to excellent advantage and you will probably think of many more when you finish reading "A Matter of Nerves."

THE LEMURIAN DOCUMENTS, by J. Lewis Burt. No. 4: Phæton. Even in the ancient days, apparently, interplanetary travel was thought of and even tried. How, is effectively told in this fourth of a series of modernized mythology stories.

THE METAL DOOM, by David H. Keller, M.D. It appears that only a small minority of our vast population could adapt itself to such a revolutionary change as Dr. Keller depicts—which assumption seems to us quite logical. How a thoroughly modern person, practically born in this age of miracles, will react in a sudden transition to a second stone age, is graphically set forth in the second instalment of this story.

And Other Unusual Scientific Fiction

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Our Cover

This issue, depicts a dramatic scene from the story entitled, "The Return of the Tripeds," by Neil R. Jones. It will be professed that the professor, shown here, was the sole survivor of the battalion of Tripeds, who entered the dimension of the uncanny, intelligent flying beings to avenge the wholesale homicide and suicide cases of the Tripeds and the metal beings. Another plane is shown coming for the professor.

Cover Illustration by Morey

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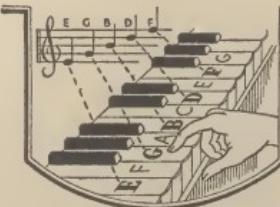
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Extravagant Fiction Today Cold Fact Tomorrow

The Nationality of Chemistry

By T. O'Conor Sloane, Ph.D

LHE fact that Lavoisier and Priestley were so close together in their dates, as we may put it, caused considerable discussion as to who was the originator and founder of modern chemistry. The French unhesitatingly say that chemistry is a French science, basing this point of view on the work of Lavoisier.

On the other hand, an effort has been made to say that chemistry originated in America, because Joseph Priestley emigrated to America in 1794 and did his original work in Northumberland, Pa., where he was instrumental in doing away with the ridiculous phlogiston theory. Northumberland is sacred to American chemists as the birthplace of chemistry.

Priestley had his troubles. His religious views apparently displeased the English. Although England was his native country, the mob broke into his house and wrecked his library. It is very interesting to study out just how these two great chemists went to work to determine the nature of oxygen and of oxides, but of course there is no place here for such details. But when the composition of the oxides of a metal was determined, then it was ascertained beyond all question that elements combined by weight, chemistry was absolutely established and born as a science based on weight. Today, the nature of the atom is the subject of investigation, and the readers of the daily papers find interesting notes and descriptions of the work of the great chemists in this line.

An interesting point to be brought out is that chemistry, at the beginning of the last century, or better, a few decades later than that period, was found for practical purposes to be a question of weights and the chemist's balance, weighing down to a fraction of a milligram, was the chemist's great instrument of investigation.

It was not long before use was made of these elementary studies to determine that matter was made of combinations of very few substances. It is perplexing to think that as far as we know, everything in this world is made up of a few elements—much of only two—which may be said to have been “selected” from a total of 92. And some of these 92 are extremely scarce, so that, as far as we know, the world could go very happily on its course, if a great proportion of these 92 elements were wiped out of existence. It is a curious thought that we might ramble around this great spheroid of ours and find that wherever we picked up a stone or a bit of clay or earth, probably there would be very few elements in them.

We talk of the sands of the seashore. These form the margin of miles and miles of ocean, and in the incalculable millions and millions of their grains, there would seem to be room for innumerable varieties of composition.

But is there?

Beach sand, as we understand it, and as we find it, on the beaches of the ocean, is a compound of one atom of silicon and two atoms of oxygen. Silicon is a dark substance, sometimes a dark powder, sometimes a solid, very hard and black. Oxygen is a gas which constitutes, roughly speaking, one-fifth of the air, but make a chemical combination of these substances so that an atom of silicon shall combine with two atoms of oxygen and you get quartz, a very common mineral; the sands of the seashore are themselves what we may term granulated quartz, which by some means or other has been broken up into little particles of nearly uniform size. Then if we go in search of beautiful crystals, we can get absolutely transparent and colorless crystals from quartz all made up of the same two utterly dissimilar elements.

We live by breathing oxygen. We certainly could not live by breathing sand.

We have selected quartz as an example of an inorganic compound, a compound which has as a rule, with some slight exceptions, no relation to animal or vegetable life, but now let us step across the line and see what organic compounds are. Here we are brought face to face with an amazing variety of chemical compounds now existing, and with possibilities of existence, there are millions of organic compounds characterized in general by the presence of carbon and hydrogen and a few other elements, depending on the substance, of course.

We all know what charcoal looks like; hydrogen, nitrogen and oxygen are invisible gases; combine them properly and you will get the most superb colors, which have driven natural colors from vegetable life out of the market. If we want to make a poison, a minute portion of which will instantly kill a man, we will make it of these same elements; the alkaloid strychnine is a good example of one of the most virulent poisons known to man. It is the chemical combination of these utterly innocent gases with carbon, which latter we know as charcoal. If you find it desirable to drop a terrible explosive in among a lot of non-combatants in a city, combine your carbon, nitrogen, oxygen and hydrogen properly and you will have trinitrotoluol which has destroyed billions of property and sent innumerable souls into the other world.

The above depicts chemistry to us as the science of miracles. Pages could be filled with the statements of what can be done by combining these elements with each other in inorganic chemistry according to very complicated formulae and in mineral chemistry, on the other hand, in formulae of the utmost simplicity.

The Metal Doom

By David H. Keller, M.D.

Author of "The Revolt of the Pedestrians," "The Eternal Professors," etc.

AS existence becomes easier with the increasing number of inventions—if we want to disregard economic conditions—we learn more and more of the science of living. But it seems to us that in direct proportion we lose more and more any knowledge we might have had of the true art of living, which, after all, in the event of any basic calamity, is what will count. Dr. Keller's foreword takes care, very fully, of anything further we might want to add to our introduction.

Illustration by MOREY

Foreword

SCIENCE-FICTION has foretold in a hundred different ways the destruction of present civilization. Mankind has had to fight for existence against gigantic life of unusual and unheard of forms originating not only on our own earth but on other planets. Every conceivable form of physical disaster has wiped out humanity in imagination.

As a matter of historical fact, the human race has survived. Decimated by changes of climate, devoured by gigantic beasts, wiped away by plague and tidal waves men have survived; and this ability to carry on the torch of life and light the dark places with the spark of civilization has been due, more than anything else, to their possessing the psychological trait of adaptability.

There is no doubt that great disasters will sweep over the world in the centuries to come. Perhaps many of these debacles will be composed of elements peculiarly strange to human experience. Man may die by the millions, but ultimately he will adapt himself to the new conditions of life, make a new adjustment and once again show that he is the master of the world.

For it does not matter so much to a man what comes into his life as it does how he reacts to it. It is believed that always there will be enough persons showing a courageous and intelligent reaction to a world disaster to finally save the existence of the human race and enable it to swing back to normal.

It is this thought that prompts the writing of THE METAL DOOM.

DAVID H. KELLER, M.D.

CHAPTER I

The Old Watch

THIS watch cannot be repaired," bluntly stated the watch expert.

"That is a rather odd statement to make. I thought the firm of Cadawalter and Sons stated they could repair any kind of watch or clock ever made."

"Exactly what we have advertised for over a century, but this watch is past repairing. Look at it yourself through this magnifying glass."

Paul Hubler did as he was told. At last he handed the eye piece back.

"The entire works seem to be badly rusted," was his short comment.

"Exactly. You must have dropped it in some water."

Hubler put the old watch back in his pocket, and started to leave the store. At the door he changed his mind and came back.

"Can you rebuild it?" he asked.

"Perhaps, but cannot promise when."

"Then I'll leave it. It has been good watch. My grandfather bought it in 1851. You saw it was one of the old key winding type. We have always kept it in the best of condition. I really prize it highly."

"We will do the best we can, Sir," said the man warily.

This watch business was getting on his nerves.

He took the watch and went to the office of the president of the company.

"Here is one more watch, Mr. Cadawalter," was his tired comment.

"Just like all the others?"

"The same condition in all of them, and they are being brought in faster than we can handle them. If the other jewelers in the city are having the same rush we are having, half of the watches in the city must be out of order."

"The only advice I can give you at present is to engage more repairers."

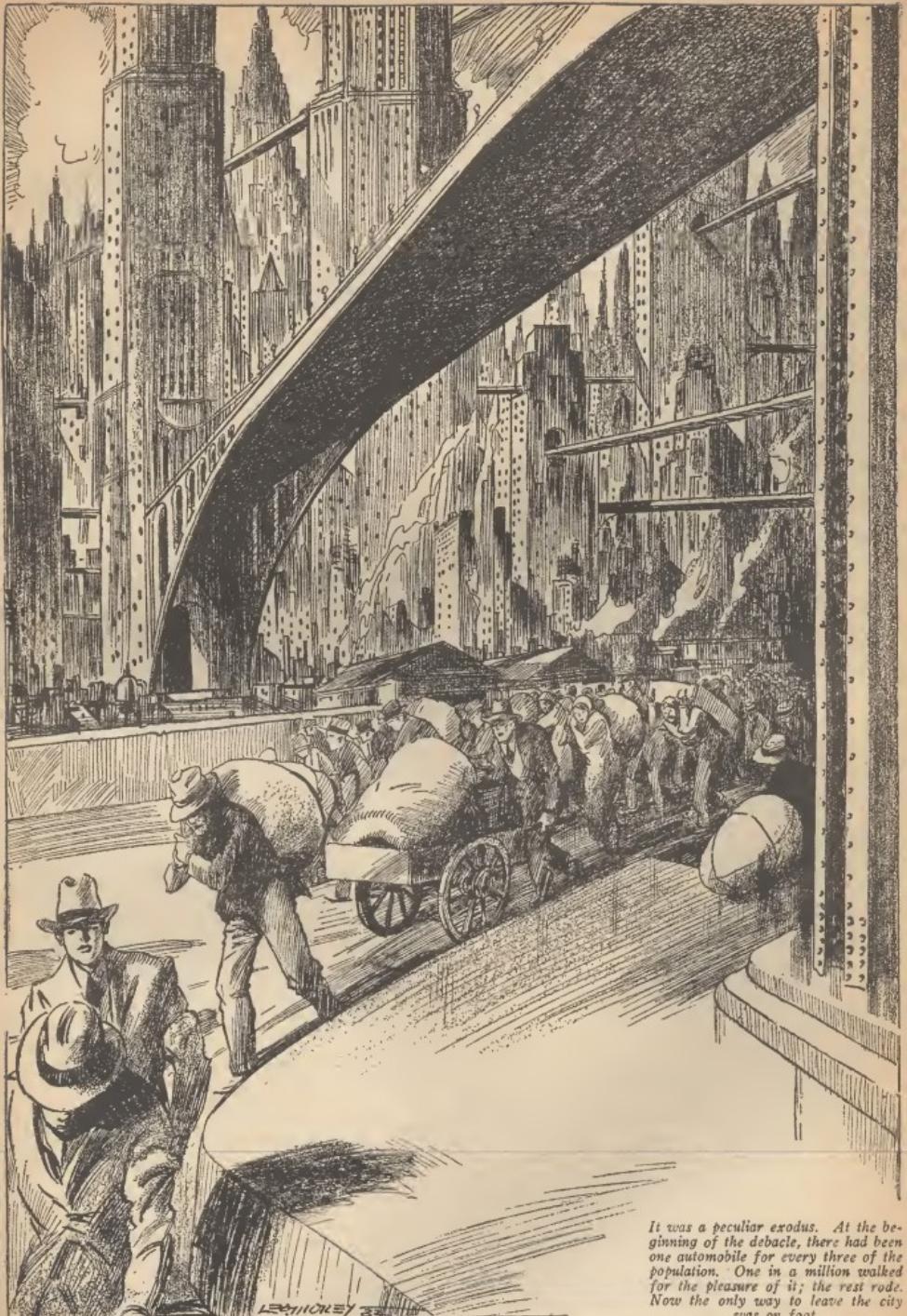
"That would not help. We have no parts to make the repairs with."

"What do you mean?"

"Just that. Every piece of metal in our repair rooms is showing the same red rust that these watches are showing. We have wired and phoned to the wholesalers, and they cannot help us. They are having the same trouble."

"Then try to sell the customers' watches out of our stock."

"That would be useless. Not one of our new watches



It was a peculiar exodus. At the beginning of the debacle, there had been one automobile for every three of the population. One in a million walked for the pleasure of it; the rest rode. Now the only way to leave the city was on foot.

is worth a cent. The works in all of them are done for."

"I'll show you one watch that is O. K.!" cried Cadawalter, as he pulled his own watch from his vest. He looked at it, first angrily, then puzzled.

"The blame thing has stopped!" was his comment.

"Of course," countered the repair man. "The same thing has happened to your watch that has happened or is going to happen to all the watches."

The rich jeweler opened the back of the case of his watch, spread a piece of white writing paper on his desk and gently shook the watch above it. A fine red dust settled on the paper.

"It is the humidity. There has been a lot of rain this summer," he explained to his employee. "I am going to give this my personal attention."

He started to telephone, thought better of it, put on his hat and left the office. In the next six hours he visited twelve of the largest jewelry stores in New York City. All told the same story; an unprecedented number of watches being brought in for repairs, no repairs possible because of the lack of repair material, and an inability of the manufacturers to furnish new material.

"And let me show you something else," said the last man he visited. "Here is a bar pin, platinum and diamonds. Yesterday it was worth at least fifty thousand dollars. Look at it under the glass. The metal is gone. Go ahead and break it. Have you examined your jewelry? Better. We are keeping this quiet, but I will tell you confidentially that all of our precious metals are just—I hardly know what word to use, but the word that comes to me is something worse than rust—it's *dry rot*."

"That is bad," whispered Cadawalter.

"It is worse than bad. It's bankruptcy."

"Have you tried to explain it?"

"No. It is something that is too new. Take the watch business. Yesterday we were doing our usual business, about a hundred a day in for repairs. This morning so many were brought in that we had to close the window. Our spare parts went bad over night. We found our new watches were just as bad. I said to myself, 'If steel goes to pieces this way, what is happening to the other metals?' and it did not take long to find out what was going on in our safes and show cases. The watches just showed the condition early because their parts were so delicate, but even our solid silver looks sick."

Cadawalter closed his eyes as he replied.

"Do you suppose," he asked, as though in a dream, "that the same condition affecting the hair spring of a watch would ultimately affect the suspension cables of a bridge?"

CHAPTER II

The Hubler Home

PAUL HUBLER, his day's work over, decided to walk home. He often walked, preferring it to the intolerable situations of the subway. This evening he was joined by an unusual number of pedestrians, most of them in an angry mood. The subways were having a great difficulty in keeping to their schedules; watches were out of order, block signal systems refused to work; there were strange breaks in the flow of electrical power. As a result it was thought best to discontinue the entire service until a complete investigation and adjustment could be made.

It was not at all satisfactory to the millions of people who had become dependent on this service. It meant

late arrival at the supper tables, a complete disarrangement of their evening programmes.

Everything was wrong anyway. The city dweller had become a slave to time. So many minutes for this and so many for that. Arrive at a place at such a time and leave at such a time. A hundred times a day look at the watch on your wrist or the clock on the tower. How could anyone live when he did not know what time it was?

Paul felt the irritability of the jostling throng, but he did not venture to ask anyone what the trouble was. He just walked home as best he could. He had been rather successful in life and the place he called home was a two-room apartment holding a wife and baby. He smiled as he thought of the baby, almost considered it an adventure in high finance.

In spite of the disaster to his watch he was completely happy as he swung into the main entrance to the apartment house which contained his home. The fact that a thousand other families lived in that identical bee hive gave him no particular concern. But what aroused his interest was a crowd of decidedly angry men and women in front of the elevator door.

"I am sorry," cried the starter, for the thirtieth time, "but these elevators are out of order, and there is no telling when they will be running. You will have to walk."

"Up to the thirtieth floor?" yelled a woman.

"That's just your hard luck," retorted a man, breaking away from the group. "I live on the tenth."

Paul Hubler started to walk up the steps. He lived on the twenty-third floor and even though he was an ardent pedestrian, his muscles ached when he reached that level. He and his wife had lived in this particular apartment over three years and this was the first time he had ever walked up the stairs.

He had a great time in explaining it all to his wife. Ruth Hubler was tired and perhaps a little cross. She was more intent on telling her husband her troubles than in listening to his. The telephone was not working, the electric refrigerator had stopped, the electric stove would not heat. The baby was cross. Nothing but a cold supper could be served, and since the elevator had gone out of commission at noon, she had been unable to go out and buy anything.

Her husband listened to her.

Suddenly it occurred to him what it meant to a woman to live on the twenty-third floor under the conditions of the last eight hours.

"We will move," he announced decisively. "We will go somewhere and live near the ground. It is time to get out of the city anyway. Now that Angelica is walking, we ought to give her a chance. We will move into the country. That is what we saved the gold for."

From the day they married they had been saving gold pieces. Sometimes a twenty-dollar piece was added to the reserve, but more often a ten or a five. They kept it all in a leather bag, and more than one evening was spent in counting it, arranging it in neat piles.

This evening, without waiting for supper, they opened the leather bag and dumped the gold out on the sitting-room table. The man started to pile it, and the wife helped him. The baby in her highchair played with a spoon.

"Look at this two and a half piece, Paul," asked the woman. "It seems soft. I can bend it."

And even as she played with it, it broke in two.

At that time Paul Hubler did not realize what it

meant. He was not to blame. Brighter men than he failed to solve the puzzle on the first day. But, he did know that something was wrong with their gold and that gold in the leather bag represented the savings of some years. He hastily put it back in the bag.

"I am going back to the street," he told his wife, hastily kissing her. "I am going to exchange all this gold for paper money. What happened to one gold piece might happen to all of them, but if we have paper money we have the government back of us."

He worked till midnight feverishly buying paper money with his gold, losing something at every transaction, but at last ridding himself of all his metal money. On his way home he bought a basket and filled it with food. His legs ached and his brain was tired when he finally reached his apartment at one in the morning. He showed his wife the paper money.

"And it is all worth a hundred cents on the dollar," he explained, "because it has back of it the gold and silver reserve of the nation."

When the Hublers went to bed that night they hoped that everything would be normal the next day. They were sure that during the night the elevators would be repaired, the telephone system put in operation, the electric range and the refrigerator restored to usefulness. They had fully decided to move, but that would take some days. The completeness of the disaster that was slowly overwhelming the nation did not cross the threshold of their consciousness. All they knew was that they had been made most uncomfortable and that by changing their place of residence they might avoid similar occurrences in the future.

Once the morning came it took but a few minutes for Paul and his wife to see that there had been no restoration of service. The telephone was still out of order, the electric servants in their apartment still on strike. There were other petty annoyances. Every safety razor blade in the cabinet was worthless; the kitchen closet was a mess for all the cans had rotted during the night and tomatoes, condensed milk and sardines made a hopeless mixture.

They ate a cold and unsatisfactory breakfast and then the husband started out to see what could be done in regard to moving. At night he slowly climbed up the flights of stairs, hopeless and puzzled, even if not completely defeated. The day's search had brought him some definite information.

Practically all transportation had come to a standstill. The automobiles in the street were silent; the subways and elevated showed no signs of activity. A pushcart here and there carried the goods of an itinerant merchant.

The sun in the sky silently continued its twenty-four hour journey but accurate time had ceased. Not a clock or watch in the city functioned. There was no communication, except from one man to another, by word of mouth. A nation developed anxiety.

CHAPTER III

The Hublers Move

"If we move," Paul slowly said to his wife, "we will have to go on foot. We will be able to take hardly anything with us. A little bedding and some clothes—and perhaps some books. We will stay here tonight and tomorrow I will try and buy some kind of

a wagon or push cart. We can make up a few bundles and start up Fifth Avenue. If we keep on going long enough, we will reach the country."

"But do we have to go?" asked worried Ruth.

"I believe so. All day I tried to learn what I could. Of course all I could hear were rumors and suspicions. The worst part is the interruption of train service; and the boats have stopped. There is no more food entering the city. There is enough here to feed the people for a week or two, but a lot of it is spoiled like our canned goods. Besides it has to be distributed through the city by hand. We had better get out. We ought to move tonight. Perhaps we can make it if we start. Tomorrow a half a million people may have the same idea; the next day five million. I am tired but . . . would you have the courage to start tonight? Let's do it. It will be cooler traveling in the dark."

"We could use the baby carriage," suggested Ruth.

But one look showed that this was a hopeless idea. The springs were broken and rusted. Three hours later the Hublers left their apartment with three compact bundles and Angelica who was just old enough to realize that there was something unusual going on. As they left the apartment Paul closed the door, but it fell to the floor! the hinges had decayed. He showed it to his wife, and commented:

"Looks as though we were not leaving any too soon."

An hour later they were on Fifth Avenue going north. The street was not crowded, but all the people on it were going north and all carried bundles. Evidently a number of people were going to the country.

At midnight Paul Hubler bought a pushcart from an Armenian. He paid exactly one hundred dollars for that two-wheeled wagon and it held together exactly two days, which was a record. In those two days they were able to make twenty miles. The morning of the third day found them out in the country. True it was an artificial country made up largely of estates of rich men, but still it was country. They were tired but vaguely happy; exhausted with their unusual exertions, but satisfied they had taken the correct action. They had been able to buy some food. Chickens had been purchased and broiled over a fire.

Fortunately the weather had been warm. Tourists' camps were abundant. There was no rain. Milk could be bought for Angelica. Under other circumstances it might have been a picnic.

After the pushcart broke down, Paul bought a wheelbarrow. He had to use a good deal of rope, and at last a stick for an axe but it kept on going and was large enough to carry the load. The family was tired, but something kept them going. Paul Hubler had an idea in his head, and that idea was slowly becoming dominant. He wanted to get as far away from civilization as he could. At last he pushed the wheel barrow up an unused country road into the hill country, and there, on the sixth day he found what he was looking for—an abandoned farm. It probably was part of one of the large estates, purchased by a multimillionaire to round out a corner of his holdings and to be promptly forgotten.

The house was an old log house, the space between the logs chinked with mud; part of the roof had started to collapse, but the fireplace and chimney were in good condition. The forest had grown up to the house and there was a lot of fallen branches on the ground.

A spring gushed out of the rocks in back of the house and gurgled noisily across the field.

"We will live here," announced Paul to his tired wife and crowing baby. Here we have water, a fireplace, wood and a shelter from the storm. I can repair the roof. Somewhere we can find a source of food. Somehow we will survive. Millions of people in the cities will die but we will survive."

"Do you mean that we are going to live here?" asked Ruth.

"Yes. Right here."

"But you always lived in the city!"

"I know. I spent so many hours a day over my book-keeping and in exchange for that I was given each week a check. We took that check and bought things, food, light, services, transportation, communication. We paid the rent. Now we will live here, and most of the things we used to pay for we will now have for nothing save the sweat of our brow."

Ruth thought of her pleasant, clean, two-room apartment. She remembered the electric stove, the refrigerator, the little washing machine and her electric iron.

"I don't want to live this way!" she cried. "I must have been overinfluenced by your arguments. Did we have to leave the city? Surely someone has found out by this time what was the trouble. How about our scientists, our inventors? I don't want to live this way."

Paul took her in his arms, baby and all. He kissed her.

"Some day we may go back to the city," he assured her, as he wiped away her tears. "Some day—but not now."

CHAPTER IV

The New Disease

MEANWHILE the nation had not been idle. A thousand scientists, a million technicians, twenty-five million workmen were trying to repair the damage done and find some method of preventing the further destruction of all the metals.

For at the end of the first week it was apparent that some peculiar and new disease was affecting all the metals, not only in the United States but all over the world. The real facts were hard to determine because communication ceased so suddenly, but it was logical to suppose that if a condition affected all steel in one continent it would similarly affect the steel of the world, and that if gold crumbled to nothing in New York, it was doing the same in London and Pekin.

Research was active, but lack of communication prevented any concerted effort. The collapse of civilization would have been slower and more orderly had the telephone continued to function. Tremendous differences would have been observed had it been possible to give directions over the radio. But the radio, dependent as it was on metals, broke down as early as the telephone. Thus each scientist fought a lonely fight in his separate laboratory, handicapped by the rapid disintegration of his armamentarium. Glass and porcelain and pottery were unchanged. Everything made of metal rotted, and the finer the piece of metal the more rapid was its decay.

A hundred experts announced a hundred opinions to those who cared to hear them. Some thought it was a rapid form of electrolysis; others favored the theory that another planet had rained bacteria on the earth, which bacteria lived on metals rather than on organic life. Some advanced thinkers spoke vaguely of a power,

like radiant energy, splitting all elements into hydrogen. No one was certain of just what was happening to the metals of the earth, but everyone who had any intelligence was slowly becoming aware of the fact that mankind was slowly losing all benefits derived from the use of metals.

For centuries the advancement of the human race had, to a great extent, depended on the use of metals. Copper, tin, bronze, iron, steel, had been the physical basis on which all progress had been based. Electricity, the white servant of humanity could only serve through channels of metals. The progress of mankind resulted from increasing rapidity of communication and greater ease of transportation and here again metal played a vital part. Muscle-man had been replaced by mind-man through the use of machines fabricated of metal. Every useful art, every necessary science depended on the use of metals.

In a few parts of the world mankind was still in the stone age, but even here the steel knife was replacing the flint one. During the first weeks of the metal disease no one was able to accurately prophesy what the end was going to be, and even the most brilliant thinkers were unable to communicate their nightmares except to a few scientists in their immediate neighborhood. It was this rapidity of metal destruction, the immediate effect on communication and transportation, that made the entire period such a dreadful one. The nation broke up into states, the states into small units. Towns organized as best they could into defensive units. Each farmhouse became an isolated fort. It soon became a survival of the strongest, everyone for himself and God help the weak and incompetent.

The last census had shown that sixty per cent. of the nation's population lived in cities. Within two weeks this sixty per cent. were trying to move into the country, anywhere, just so they could get food. For years the urbanite had read that there was an overproduction of food, that wheat, potatoes, milk, butter, eggs, were always in abundance. They knew that all their food came from the country. What they did not know was the labor necessary to produce this food, and concerning this they were indifferent. They had money and with this money they bought food sent to the cities from the country.

Now the trains, trucks, boats had ceased to carry the food to the cities. The city men reasoned that the food must still be there, out in the country, so they went out to get it. They had money and they believed that food could still be bought.

It was a peculiar exodus. At the beginning of the debacle, there had been one automobile for every three of the population. One in a million walked for the pleasure of it; the rest rode. Now the only way to leave the city was on foot. Throughout the entire nation there was neither ship, locomotive, automobile nor airplane, capable of transporting humanity singly or in groups. The railroads were rapidly becoming streaks of red rust, motive machinery was rotting, ships sinking in the harbors.

So the people started to walk out of the cities. As they walked they scattered. For a while they met with kindness; their money bought food; the roadside stands did a rushing business. But the demand was greater than the supply and then became a struggle for existence. Those who had food refused to sell it; those who were dying for lack of food tried to steal it. For a

month around every farming community the battle waged. With clubs and stones the embittered farmers fought for their right to use their supplies to save their own lives. Except where overwhelmed by sheer weight of numbers, the farmers always won the battle. At the end of the month a slow adjustment was begun. The brighter of the city dwellers began to learn how to survive under the new conditions. Here and there they were welcomed by the farm group, and even started in the country life with as much help as possible.

The death rate was high. Just how many of the total population died during that first month of panic will never be known. Years later the revisited cities revealed horrible stories of suffering. Thousands and hundreds of thousands of people never left the city. After all it was their home; they knew no other life; they could not believe that the city was doomed, and so they remained till it was too late.

Others stayed because it was their duty to do so. The policeman on his beat, the doctor in his hospital, the nurse by her patient, the mother by her infant child remained and died on duty. The full tale of heroism will never be told till the day of Resurrection, but there remained a certain percent of humanity, who died with their faces to the battle rather than yield to the panic that evacuated the cities in surging white-faced mobs.

Thus the cities died. Dependent on metals, they died when metals disappeared. Humanity, changing overnight into the second stone age, lost much of its civilization, and all of its congestion. The psychology of the period was peculiar in that such a large part of man's knowledge became suddenly useless, because he had lost the metal tools whereby that knowledge could be expressed and put into practical use. Man entered the second stone age with the intelligence of a man and the ability of a child to use that intelligence.

So, in a few months, humanity drifted back into the dawn of time and the beginning of things.

CHAPTER V

Hubler Makes An Ax

THE three people started to live in the old log house, and it did not make such an uncomfortable home. A fire was started in the fireplace and never allowed to go out. Potatoes were roasted in the ashes with corn on the cob. An occasional chicken was broiled a piece at a time on the end of a stick, and Angelica became very fond of a nanny goat which had, for no apparent reason, adopted the Hubler family. The goat furnished the baby both milk and a playmate.

The days were very busy. Paul was out all the time gathering sticks, breaking them as best he could, and filling one end of the house with a winter's supply of firewood. At other times he was on the roof with branches of pine and mud which he spread over the thin spots in an effort to make the house waterproof. He cleaned out the spring, and tried to make the land around the house look clean and orderly. Every day no matter what else he did, he spent some time throwing stones at a target. He forced Ruth to do the same thing. Then one day he began the collection of piles of small stones, near the house.

"We may need them," was his only comment.

During this month he did a lot of thinking. It made his wife rather unhappy to have him sit on the floor

before the fire and keep still for some hours at a time.

"Why don't you talk to me," she would ask.

"I have to think about this. I want to find out what it all means," was his invariable reply.

Then one night he started to make his ax. There was a hickory stick, split at one end, a stone, flat but rather sharp at one end, and some pieces of wild grapevine. His first attempt was a failure, and to the average man would have been disheartening. He simply tried it again, and finally he found how to wrap the twines of grape vine in such a way that they held the stone. Then he started to use the ax and found at once that there was something wrong with the balance of it. The handle was too long.

It was one thing to saw through a piece of hickory and another to cut it off evenly with pieces of stone. Hubler soon found this out, and reverted to the old method of burning the end in the fire, then pounding off the charred end and burning some more and pounding some more till he had just the required length. At last he showed the ax to Ruth rather proudly. She did not seem to be enthusiastic.

"What are you going to do with it?" she asked.

He looked at it for some time before he replied.

"It will be a handy thing to kill something with."

"What are you going to kill?"

"Something; anything that needs killing."

After that he spent considerable time every day in swinging the ax around his head and learning to strike with it. In a week he became almost proud of his ability. His muscles were hardening, his co-ordination improving. He made a smaller one for his wife and encouraged her to use it. He even made a little one for Angelica and it was great sport for the three of them to go out in the warm sunshine of the afternoon and practice with the axes.

"We are going to go slowly back into the arts of the stone age," the man explained. "Of course, it will take time, but as the need arises, our ability will grow. It will be interesting to watch our development. We know about the sling, the bow and arrow, the long spear and even the catapult, but we have never made them for centuries and naturally have never used them. We do not have to invent these things, we simply have to become proficient in the making of them and then in the use of them. We know the theory, the mechanics—what we must learn is the actual construction. When I was a boy, I gathered Indian arrow heads. I can tell you a lot about their shapes but right now I cannot tell how they are made or how they are fastened to the shaft. Someone will have to learn all this. Perhaps the time will come when there will be manufacturing centers where nothing but arrows are made."

"But we have to have these things. The man who gets them first and becomes proficient in their use will be at a great advantage over the other men."

"In what way?" asked Ruth, "and why?"

"Because every man may have to fight for his rights?"

"But how about the law? And government?"

"I do not know; but I think that law and government has ceased to exist."

"In other words you are trying to tell me that you are planning to kill—and kill—and, why you never killed a chicken."

"I know; but that does not say I won't kill—if necessary."

Paul was not psychic, but he did a lot of thinking. As

a result he developed the habit of carrying his ax with him on his trips to the wood to gather branches. He was out one day experimenting with the ax on some dead wood when he thought he heard a cry. The next second he was sure of it. It was Ruth and she was in trouble. Ax in hand he started to run home. He ran silently, with sure steps; as he ran he thought to himself that two months before such speed would have winded him; now he was growing tough. He almost jumped around the corner of the house and found what he had expected.

A big man, with ragged clothes and a long beard, had Ruth in his arms trying to kill her. She was scratching, and biting and kicking. Angelica, sitting against the side of the house was just crying.

Paul, almost automatically, swung the ax around and brought the sharp edge of the stone down on the man's head. He was rather surprised to see how easy it was to hit a man like that, and how very efficacious it was. The man just grunted and dropped and that was all there was to it.

Ruth started to faint, thought better of it, picked up the little child and started to comfort her.

"Thanks, Paul," she said, simply. "Now I guess I will go and cook something for supper and you can tidy up the yard."

Hubler turned the man over on his back. There was no doubt about the fact that he was dead. So he dragged him over to a little gully and piled a lot of stone over him.

"And that is Number One," he said out loud, "and the rest that come will get the same treatment, and tomorrow I am going to start in earnest to make a bow and some arrows, because the next man may have a club or an ax and I am not sure how I would do in a real fight. It is one thing to hit a man in the back of the head and another thing to hit him between the eyes. But one thing is sure. So long as I live here I am going to take care of Ruth and Angelica. No tramp or common bum is going to hurt them so long as I can prevent it—and I have a feeling that I can prevent it so long as I am alive."

After supper Ruth took her ax and went to the edge of the woods.

"I am going to learn to throw this ax," she explained to her husband.

"I am going to learn to throw it so it will hit a tree and cut it way into the bark."

"That is the way we used to throw a penknife when I was a boy," commented her husband. "We threw it all different ways in a game called mumble-le-pegs."

"This is not a game, and a woman does not always hit what she aims at," replied Ruth, "so you and the baby get out of the way."

For a while she did not even touch the tree. Then she was always able to hit it with some part of her ax. After two hours, just at the end of twilight, she had the satisfaction of seeing the stone edge of the ax sink into the bark.

"I'll do better tomorrow," she said, "and in a week or two I'll be about perfect."

Later in the evening they sat before the fire. The night was not cold but there was a chill in the air that told of the approaching fall. Angelica was asleep on her fragrant bed of pine needles.

"How do you feel about it all, Paul?" the woman asked.

"Fine as can be."

"I mean about killing that man?"

"It is all right. He had to be killed. Of course, he was the first one, but there always has to be a first one of everything. And if I had not killed him he would have killed me. I have a feeling that I am going to kill more men before things reach normal, and all I want to do is to always feel that I am justified in the killing. I never want to kill just for the pleasure of it."

As he talked he was pushing a sharp stone backward and forward in a line across the handle of the ax.

"What are you doing that for, Paul?"

"That is my tally."

CHAPTER VI

The First Visitor

TWO days after that, in the afternoon, the family were out on the edge of the forest practising throwing the ax. Even Angelica was toddling around throwing little sticks at rocks.

Ruth took careful aim and hit a tree in a perfect throw.

"That is fine," exclaimed a voice, "but I wish you would not pick out a sugar maple to practice on."

Hubler whirled around, ax in hand, ready to fight.

But the young man, smiling, advanced with hands above his head.

"Don't take me too seriously, my dear sir. I have only come to call on you and your wife."

"We do not want any callers. A man called a few days ago and he is under the rocks in the ravine."

"You persist in misunderstanding me. My name is John Stafford. I own a few thousand acres of land around here. In fact, I own this farm, though I never visited it till today; but one of my men told me he had been seeing smoke from the chimney so I thought I would walk over and see who was here. Have you been here long?"

"We have," answered Ruth. "Ever since we left the city when the metals went to pieces. We came right here, and tried to get along. There is still some money in our pocket and if you tell us what the rent is, we will be glad to pay it and stay. We like it here. We hoped that we could plan our life so we could live here."

"In an age of stone?" asked Stafford.

"That is what it looks like," asserted Hubler, slightly smiling, as he looked at his ax. "Would you mind going to the house? We are sorry we cannot offer you something worth while in the shape of food, but the spring water is excellent."

Later on the visitor started the conversation.

"So you folks left New York early?"

"Very early. We were in the first rush, and, as I had a pushcart and later on a wheelbarrow, we made rather good time, in spite of the baby. You see I had always prided myself on being a pedestrian and my ability to walk came in good stead. I reasoned that there were a lot of people behind us and that most of them would stay on the cement roads, so at the first good chance I hit a dirt one and landed here. So far we have only had two visitors, and the first one did not live very long. He was rough with Ruth. You are number two."

"I think," said Stafford, "that you are the kind of people I am looking for. Let me tell you my story. I have always been rich, a manufacturer, but my main interest was in horses and the olden days and the ways

folks used to do things. People thought I was a fool, and I guess I was. For example, I hated barbed wire. Not an inch of it is on my stock farm. Stone fences and rail fences, but not a bit of metal, not even a nail in them. Same way with my house. All built of wood, put together with wooden nails. I even had a set of wooden dishes. I collected arrow heads, learned to shoot with a bow. I have as fine a collection of tomahawks as you ever saw. And horses! You ought to see those horses.

"Then the crash came. I was in New York at the time. I waited for a while, longer than you did, just long enough to arrive at an opinion of the seriousness of it all and then I went up the river in a sailboat, though part of the time I had to drift around waiting for the wind. But I arrived before much of the mob came, and then I started to save my place.

"Guess how I did it? Just stood at my front gate and gave away money. I always had a lot of cash in the house and now I gave it away. Every one who came by, I told them that I was sorry for them and here was a twenty dollar bill or a ten dollar gold piece and they should go on to the next town. I had my hostlers and house men in back of me with clubs and we were a bad looking lot and so the mob flowed on past my place. Lots of my neighbors had a bad time. Some were killed and some came to my place for safety, but we got by. Not a horse was stolen; not a fence was broken."

"I suppose the money you gave them was worthless," commented Hubler.

"Certainly. I knew it when I gave it to them but they did not. Of course we don't know for sure, but I think the United States is a thing of the past. Even the state government is gone. But I rule. I am the state. I have fenced in three thousand acres of land and that land I am going to hold, and the things on it are going to stay mine, and I and my friends are going to live on it, in a new stone age, and we are going to work out our salvation and perhaps do a little to save other communities, and anyone who is against us is going to die."

"So you came here because you heard we had squatted on your land and burned some of your wood and killed a stray hen or two?" asked Paul Hubler, tightening his grip on his ax.

The visitor laughed, as he answered:

"No. I came here because I heard there was a man and woman and little baby trying to solve their problems in an intelligent manner. To be honest, we have been watching you for several weeks. I have been pleased with the reports of my men. I think that you are the type of man we are looking for. You are brave, moral, and you have not only imagination but some ability. In our new life we need men like you. I am not going to ask you to come and live with us, though some day you may want to, but I do want you to come over and see us and get an idea of our plans. Perhaps we can give you some supplies to help you over the winter and my men can come over and fix that roof up for you, and help build a pen for the goat, and in addition you ought to have a horse."

"You come and see me and talk over plans with me. Let me help you. Then, if the pinch comes and you need more help, you know where to go. It is not so bad now, but when winter comes, these woods will be dangerous for a lone man and his family. I believe there will be gangs of men, hungry and desperate, who will go over the state this winter like packs of wolves. If you were with us, your wife and baby would be safe."

"There is something to that," replied Hubler, thoughtfully.

"Think it over," urged the visitor. "Let me draw a map for you in this dirt. Here is your road and here is another road and that comes out on the concrete, and then turn to the left and my place is just around the bend of the road. Cannot miss it. Only be careful when you come near to the fences. I have sentries out now and we tell the people to move on or get killed and we mean it. If one of the men says anything to you simply say, *"Better days are coming"* and that will pass you through the lines, but I'll tell the boys to be on the lookout for a man with a pretty baby. We will have to make a bone necklace for that little one, Mrs. Hubler."

"Do you really think there is going to be trouble, Mr. Stafford?" whispered Ruth, holding Angelica a little tighter in her arms.

"Positive of it. We have had bad days and worse are on their way. The cities literally vomited their people. For a while the crooks stayed to steal but they soon saw that their plunder would not feed them, so they joined the mob. And the way we have had to treat them is not very nice to think about."

"But I am sure there were some nice people you could have helped," insisted Ruth. "There must have been some nice people who passed your place."

"There were some," agreed Stafford. "In fact I have ten families on my place now. But you would be surprised what a very few there were that I could feel sure of—enough to ask them to join my new republic. It was this way—I had an idea, and if they were ever so nice and did not harmonize with that idea, I simply could not help them."

"What was the idea?" interrupted Hubler.

"You ought to know it from the fact that I have asked you to join me. I am forming a colony; its isolation is just as complete as though it were on a desert island on the Pacific. It is going to be composed of separate families of clean cut young men and women who are intelligent and courageous and who have imagination. I want every unit to become self-sustaining, but at the same time every man and every woman should be able to contribute something in the way of a specialty that will tend towards the public welfare. For example there must be a doctor who is able to do surgery, an engineer who is able to construct fortifications and help us with our artillery, an expert in agriculture who will advise us in the growing and harvesting of crops. There must be an expert in pottery, someone who can teach the women to harvest the flax and cotton and spin thread and weave cloth. There will have to be a great deal of cottage industry. The time may come when we will be able to have men and women work just at one task, but for the time I want every man and woman to learn to do everything. But above all they have to be brave—have a vision of the future, learn to prepare for that future."

"It sounds interesting," admitted Ruth.

"But it does not explain why you picked us out," added Paul.

"I thought you would see," answered Stafford. "You left the city early. That shows foresight, imagination. You have a quick conception of what was going to happen. You realized that safety lay in isolation, and you saw that most of the people would be afraid to leave the cement roads."

"You came here. The two of you took a deserted farm and broken down house and made a home. You

learned to do things. I bet that right now you are saving seed corn for next year, and you have set aside the winter's firewood. You made your axes and started to learn how to use them. You are taking good care of the baby. The place looks clean. You three are a family. If you never saw anyone for five years you would get along. That all shows you are adaptable. I want you. I wish I had fifty families like your family. Will you join us?"

The man and woman looked at each other. They understood.

"Not just now," answered Hubler. "We have really had a good deal of pleasure out of this experience. We have sort of made a second honeymoon out of it. I think that we would like to stay here this winter—at least try it. Perhaps in the spring we will join you. The baby will be older then and should have the company of other children. Of course, something may happen and then we will be glad to come. It was kind of you to praise us the way you have, and invite us, but just now we want to try things out a little longer."

The visitor rose and stretched himself.

"I will send you some things," he said, "a few things to make you more comfortable, and I will have my scouts drop in now and then. Any time you change your mind come over and join us."

CHAPTER VII

News from the North

JOHN STAFFORD walked down to the road, mounted his horse and was soon around the turn of the road. Paul and Ruth waved a gay good-bye of him and then calling Angela, went into their home.

"That is a nice man," commented Ruth. "I wonder if he is married."

"At least he has an idea of the important part women are going to play in the new world," laughed her husband.

On the way back to his farm Stafford did a lot of thinking, and the end of the thinking was the same as the beginning, and that was the fixed idea that Paul and Ruth and Angelica Hubler would make a valuable addition to the new social order he hoped to establish.

He was a little surprised to find a strange horse hitched to a post in front of his home, and the rider of this horse serenely seated on a chair on the front gallery. The newcomer lost no time in introducing himself.

"I am Andrew Mackson, Mr. Stafford. I am from Vermont, and I am hunting men."

"Do you mean real men, Mr. Mackson?"

"Nothing but that kind."

"I have number on this farm. What can we do for you?"

"Have you the time to listen to me?"

"Certainly. After that we will have supper. I'll have your horse put up. Looks like a fast animal."

"He is. But I do not want to impose on your hospitality. Still, if you insist, I will stay. Roads are dangerous. I judge you are fond of horses?"

"Big part of my life."

"How are you shoeing them nowadays?"

"Oh! Just leather pads securely tied with thongs. On dirt roads I don't worry about shoes. My horses are doing well."

"How about fences?"

"Mine are all stone or rail, and so is my house, but let me tell you why I am here. My part of Vermont is just about deserted, but it has more pretty, small farms, than you ever dreamed of, and lots of water power. Just lots of timber; and most of the farms have stone houses on them. I want men and women to come up there and live, I can show them how to build mills to run with water power, and we can grind the grain with mill-stones. I think that some day we can even get some timber out, if we can make a saw with flint teeth. It is nice country up there, and we have worlds of the very thing you need in this new life."

"What's that?"

"Stone. We have stones of every kind and every shape. What ever you want in the way of stone we have it. Add to that water power and forests, and stone houses already built, and you have a paradise. All we need I have mentioned. We want men and women and children. People with courage and imagination and the determination to do everything in their power to help build up a new civilization. Do you know any that way?"

"That is the kind I am hunting for, Mr. Mackson. You may not know it, but right here is the capital of the new republic. Just as soon as I can find them I am going to put a hundred families here and we are going to work our new life out together and we are going to have a stone age here that will be more worth while than any metal age ever dreamed of being."

"You wouldn't want to spare any of the families you have?"

"Not one. The kind of family I am looking for is scarce."

Mackson drummed on the seat of the empty chair by his side. At last he broke the silence.

"I have just thought of something, Mr. Stafford. Up in Vermont I have an idea of a small unit of people who will form a small commonwealth and be absolutely independent of the rest of the world. Independently you arrived at the same idea. Down in Connecticut I found the beginnings of another unit and the leader there talked the same as we talked. He wanted to show the world that the Yankees could do more with stone than had ever been thought of. He asked me to bring my folks down and learn how to really use stone—just as if he could teach a Vermonter anything about stone."

"My idea is this. In the old days of metal and electricity, there were a lot of no-account people; just a lot of them who thought of nothing except their own pleasure and never had an original idea from the day they were born to the day they died. But at the same time here and there all over the states there were worthwhile folk, perhaps descendants of the old pioneers, at least men and women with lots of stone in their backbones—folks who never knew when they were licked."

"Those people here and there are going to form colonies like your republic and mine. They are going to work along the same lines. Use all the intelligence they have and work out their own problems in their own way. These colonies are going to be like oases in the desert. The common herd will mill around and finally die out. Perhaps a good many will have to be killed. Finally only the people in the colonies will be left. And then we will have to unite in some way, for mutual defense, if for nothing else. Perhaps we can build a large fort somewhere, so if we care to attack we can use that for a rallying place. I don't want to leave Vermont and you don't

want to leave New York but we might have to, anyhow.

"You mean there might be a war?"

"Certainly."

"Whom with?"

"I do not know; but someone. There are a lot of people in South America, and then there is Asia. We will not know for a long time what happened in Asia, but they probably felt the change less there than we did. But, no matter whom we fight, we will have a war, and we might as well get ready. My young men are out every day shooting at a target with their bows and arrows, and we are working at catapults that will throw a twenty-pound stone a hundred yards. We are going to hunt wild pigs this winter with stone-tipped lances, from horseback. Now if you want sport, you try that."

Stafford ignored the sporting side of the conversation and returned to the serious part.

"So you think there might be trouble. I think so, too. In fact I think we will have a little war this winter. There are several gangs of New Yorkers working around here, and they are not pleasant neighbors. When winter comes they are going to be hungry and my people are going to have food. I have been thinking of building a fort, so the women and children will be safe."

"Might be a good idea," commented Mackson, "but I tell you what I think. As soon as winter comes, at least cold weather, put your men on horseback, and round them up. Give the rascals so many hours to get out and stay out. If they start to fight, exterminate them. After you wipe out a few of the gangs, the others will give you a wide berth. There were some men like those you tell about came down from Montreal, hunting for warmer climate, and believe me, they found it when we started after them. A fort is all right, but if you fight early enough and hard enough, you won't need one."

CHAPTER VIII

The New Republic

THE conversation between the two leaders was interrupted by supper. After that there were more conferences, as a result of which a very important decision was arrived at. The former area of the United States was divided into five parts and only one dividing line was artificial. The parts were 1 and 2, east of the Appalachian and north and south of the old Mason and Dixon line; 3, between the Appalachian and the Mississippi; 4 between the Mississippi and the Rockies; and 5, west of the Rockies. Each of these five parts were to be absolutely independent of the other four but were to unite for defense. Within each part were to be formed a number of separate, independent communities, who would be in communication and help each other in every way possible. Once a year representatives of the smaller units would meet. Once every five years there would be a meeting at or near St. Louis of five representatives of the five republics.

That was the programme formulated during the evening's conference. It avoided all finances, for it was early recognized that money, as a means of exchange, was something that would have to be developed. The exchange of work and the exchange of surplus commodities, the ancient system of barter, for many years would replace money. Within each community each citizen would contribute toward the welfare of the community and in return would be cared for by the community.

One of the men engaged in the conference objected:

"That is socialism, pure and simple. No community founded on those lines, has ever survived. It does away with personal initiative."

Stafford's argument was brief.

"None of those communities lived in the stone age."

Stafford turned to Mackson:

"You are a pretty good talker, Mr. Mackson. Someone has to carry the message. How would you like to give a few years of your life to the spreading of this political gospel? I will loan you a few of my best men to serve as a bodyguard, and you go out to the Pacific Coast and see how far you can go in organizing the old U. S. A. along these lines. Someone has to do it. Every place where they have the vision of the future that we have; talk things over and see if you can get them to sign on the dotted line. When you reach the coast, have one of their big men ride back with you, so he can become personally acquainted with the situation in the east. Will you do it?"

"That is a big contract, Mr. Stafford."

"But I am asking a big man. Your only reason for refusing would be your honest conviction that your Vermont colony would go to pieces in your absence."

"It wouldn't," the Vermont man was honest enough to admit, "for my brother up there is really a better man than I am."

"Then it is all settled. I have a piece of paper here and a quill pen. I will draw up articles of confederation, and you and I will head the list of signators. You take the paper with you. I have a feeling that in this room we are making history, gentlemen. It may be that some day this paper will rank in importance with the Magna Charta, and the Declaration of Independence. How shall I start it? Something like this:

WE, THE UNDERSIGNED, LEADERS OF NEW ECONOMIC AND POLITICAL GROUPS WITHIN THE BOUNDARIES OF THE UNITED STATES, BUT EXISTING UNDER A NEW STONE AGE, BROUGHT ABOUT BY THE METAL DOOM, DO HEREBY PLEDGE OURSELVES TO THE FORMATION OF A CONFEDERATION OF THESE GROUPS FOR THE FOLLOWING REASONS:

That was the way the first rough copy started. It was rewritten several times, but at last they had something that satisfied the group of educated men gathered in the great living-room.

Arrangements were made for the little group of men to start west early the next morning. The four men selected to go with Mackson were all experienced horsemen and expert marksmen with the bow and arrow. There was no reason to think that there would be any special danger but it was felt best to be prepared. The five men realized that even with the best of luck it would be more than a year before they returned to their homes. At the same time the novelty of the journey was such that they looked forward to it with a spirit of enthusiasm.

Later on, when communication became better, other colonies claimed that they were the first to originate a plan for a new confederation. They deserve honor for their originality but as far as historical research is concerned, it is practically certain that the honor of priority fell to Stafford and Mackson and it is the paper that Mackson carried to the Pacific Ocean and back to Vermont that is recognized as the greatest paper of the new stone age. The names of signers on it comprise practically all of the great men of the new world, three of the signers later becoming Presidents.

Stafford made the final comment as the meeting adjourned:

"Tell those you meet, Mackson, that this first is a survival of the fittest. Those who cannot be trusted, who are incompetent to learn the new lesson, who hold on to the old ideas of power and riches and the oppression of the poor must be cast out of our communities. If they perish, they perish. We dare not try to save them. The same way with the feeble-minded, the insane and the degenerate. Our society must not save them."

CHAPTER IX

How One Man Died

IT is certain that since the discovery of printing, no world disaster had ever been so poorly documented as the period of the *Metal Doom*. Practically over night there was a more or less complete cessation of the daily press. One day the giant presses of the country were stamping the news on thousands of tons of pulp paper; the next day those same presses were silenced. One day news was flashed from the Orient to the Occident in the winking of an eye; the next day the telephone, telegraph and wireless had ceased to serve mankind.

Time passed and eventually the scientists had some fairly definite idea of how humanity had reacted to the new conditions under which life had to be lived. An interesting and perhaps partly accurate history could be written, but at the best only the surface of fact would be scratched; most of the reactions can only be guessed at.

One man, however, laboriously wrote his story before he died, and because that story tells the tale of a brave man, and also because it partly explains the final statement of Stafford, it is worth while adding that story to this tale.

At the onset of *THE METAL DOOM*, humanity was probably as kindly foolish towards its delinquents and abnormals, as it had ever been in any historical epoch. In the United States alone there were over a half million criminals being supported by the taxpayers and another half million abnormals composed of the insane, epileptic, and mentally deficient members of society. Whereas other ages constantly eliminated the unfit, there was, in the United States, a determined effort to prolong the life of each person as long as possible, irrespective of his ability to provide for himself or the impossibility of improvement or ultimate cure. The highest type of the medical profession believed that the prolongation of a human life even ten minutes was worth the expenditure of every possible scientific effort.

Consequently, the abnormals were placed in special hospitals and there cared for, in such large numbers, that their maintenance became a most serious problem to the taxpayer. At last as much was spent in the care of the physical and spiritual defective each year as was spent in all forms of education. Irrespective of the number of hospitals built each year, the demand for more beds always kept ahead of the building programme.

To these prisons and hospitals the *METAL DOOM* came. The prisons constituted a permanent menace to the new social order. Capital punishment had been almost completely abolished and life imprisonment substituted in its place. Thousands and hundreds of thousands of degenerate criminals were held in restraint only

by steel bars and modern firearms. Over night the firearms became useless. Within a week the steel bars decayed and these criminals, frantic with fear, desperate with hunger and menacing from the possibility of a complete revenge upon society, hurled themselves on a world that was already staggering to its social debacle. Ultimately decent society eliminated these criminals in many a hard fought and bloody battle, but for some years gangs of law violators roamed the forests and swallowed all who came within their clutch.

With the insane and feeble-minded, the problem was a different one. Probably the solution was slightly different in each hospital. Apparently the majority of superintendents felt that all they could do was to liberate their patients and allow them the right to survive if they could.

Dr. Hiram Jones was the Medical Director of the Central Pennsylvania State Hospital for the Mentally Defective. His patients were probably lower in intelligence than the patients in any similar institution in the United States. There was a larger percentage of idiots and low grade imbeciles. Dr. Jones, in his daily rounds, preached the gospel of loving kindness and the prolongation of every life. He sometimes wondered just why his helpless charges should be allowed to live, but he never wavered from his professional pride in their care. In his more grandiose moments he called them all his children, certainly a large and peculiar family, thirteen hundred idiots and near idiots.

His superior officer was a political appointee, who, when the crash came, left at once, to take care of himself and his family. Of the one hundred and ninety employees, a large number walked off when they realized the impossibility of caring for their charges under the new condition.

Dr. Jones and ten faithful men and women tried for two days to feed and care for the thirteen hundred patients. During that time Jones went without sleep. At twilight of the second day he had arrived at a decision. He gave orders that all of the little ones should be put to bed. This was not a difficult task. Going to bed and to sleep was something that all in the hospital had done so often that it had become routine.

Sleep and quiet, blessed twin angels, hovered over the hospital, and then Dr. Hiram Jones started to make his last round. He paused at each bed, and with a medicine dropper carefully placed between parted lips five drops of medicine and then on to the next bed. He worked methodically and quickly, aided by his little band of nurses. At last all of the patients were asleep.

And from that sleep we trust they wakened into a world where all little children are bright and happy and intelligent.

Dr. Hiram Jones said good-bye to his nurses and advised them to do what seemed best to them and then he went to his office. There he lit a tallow candle and finished writing his story. He used a quill pen he had just made for the purpose. He had written the story of those hard days and now he added an ending as though to justify himself in the eyes of all who would come after him and read.

"AND MY FINAL CONCLUSION WAS THAT IF THESE CHILDREN OF MINE WERE LIBERATED THEY WOULD ALL OF THEM DIE OF STARVATION OR WORSE. SOME MIGHT LIVE FOR WEEKS—LIKE WILD ANIMALS LIVE IN THE WOODS—BUT EVENTUALLY THEY WOULD DIE. IT MAY BE THAT EVEN THE MOST INTELLIGENT OF

OUR NATION WILL HAVE A HARD TIME TO SURVIVE, BUT THERE CAN BE NO FUTURE AND NO HOPE FOR THESE POOR THINGS I HAVE CARED FOR THESE LONG YEARS.

"AND SO I AM SENDING THEM HOME. IT IS A HAPPY THOUGHT TO ME THAT THESE CHILDREN HAVE A HOME TO GO TO AND A FATHER WHO IS MORE KIND AND WISE IN HIS DEALING WITH THEM THAN I HAVE BEEN ABLE TO BE. I AM SENDING THEM HOME! AND YET THESE CHILDREN LOVED ME AND TRUSTED ME. THEY SHOWED NO FEAR BECAUSE THEY WERE IDIOTS, YET THEIR MENTAL POVERTY ONLY ADDED TO THE WEALTH OF THEIR LOVE FOR ME."

"IN DOING THIS NEED I HAVE SHATTERED TRADITIONS OF A LIFETIME. I DID WHAT SEEMS BEST FOR THEM, BUT TO ME IT WAS A LOSS OF ALL THE BEST IN MY ETHICAL LIFE."

"I CAN ONLY COMPENSATE BY JOINING THEM IN A BETTER WORLD."

So Dr. Jones dropped ten drops of the medicine on his tongue, blew out the candle, and went into the darkness to find his children. Two years later the message was found on his desk with all that remained of a brave man, still seated with his head in his arms.

CHAPTER X

The Right To Live

WINTER was approaching. The Hubler family was prepared for it. They had received some help from Stafford, but even without that, they would have done fairly well. They were learning, not only to live the life of pioneers, but in addition to accommodate themselves to the conditions of the new stone age.

Paul had made some traps and every day brought in some fresh meat or some skins. Ruth was learning to make articles of clothing out of the skins. Even Angelica in her play was preparing for the new life. Her dolls were growing up in a non-metallic period.

Every morning Paul would start out to make a round of his traps. Late afternoon found him back in the house. The entire family was comfortable. They had the necessities of life, though entirely deprived of the luxuries of their former home in New York. They often talked about that city. Now that Hubler was a little more sure of the future he had more time to talk.

"I have often wondered just why men like Stafford did not send expeditions into the city," he said one evening. "There must be a lot of plunder there that would be useful for many years to come. Think of the full storehouses, the department stores, even the private homes, deserted like ours was. Some day when I have a chance I am going to talk about it to him."

"I am afraid that it is all rather mussed up," replied his wife. "You remember what happened to our canned goods; and then just as we left our apartment, the faucets started to leak. I believe that the city was flooded. Think of all the water pipes going to pieces. Perhaps by now many of the buildings have fallen down. It was really the steel that held them up toward the sky. I think that some day Mr. Stafford will go to the city, but it seems to me that his idea is to become absolutely independent of the past. Anything we took from the city would only last so long and the time would come when we would have to learn how to make things or go

without, so the sooner we begin the better we will be able to live on."

The next morning Hubler started as usual to make a round of his traps. A light snow had fallen during the night and the woods had turned into fairy land. He determined to make a larger circle than usual in the effort to locate some new hunting grounds up on the mountains. He was four miles from home when he saw smoke.

That was enough for him.

He had never seen smoke in that direction before.

And smoke meant human beings. He wanted to know what kind.

Born and raised in the city, he had behind him a long line of frontier ancestors. His forebears had fought the Indians so often that they had almost turned into Indians themselves. Once Paul Hubler set his feet on the bare ground, he had reverted to type. Call it inherited memory, or any other name, the fact remained that he had become a natural and very efficient woodsman.

So he started to find out where the smoke was coming from.

Two hours later he was motionless on an overhanging shelf of rock. Fifty feet below him was the fire and around that fire were fifty men, escaped from Sing Sing. They had raided a farm, killed a cow, and now were busily engaged in eating it and trying to keep warm.

There was no doubt about the fact that they were a menace to society. Paul could hear them talking, the argot of the New York underworld. A lot of the slang he could not understand but he had no difficulty in catching the drift of their conversation. They were tired of living in the forest, and too lazy to build cabins. They had killed and robbed, but now there were no more isolated families, no easy plunder. The winter was going to be cold and long.

And they planned to attack the Stafford farm, kill the men, take possession of the buildings, and add the women to their gang. It was not an unusual plan. Similar collections of degenerates had been doing just that thing ever since the beginning of the *Metal Doom*. The unusual part of it was that they were talking rather loudly and Paul Hubler was on the overhanging rock.

He had heard enough, and left as silently as he had come. Once away from the vicinity he traveled as he had never traveled before. He came to the edge of the wood; he came to the house and found Ruth and Angelica safe, and then, without pausing to tell her the reason for his haste, he told her to put on her wraps and get ready to leave the house.

"We are going to see Stafford," he said. "I have to see him."

It was a long walk. They took turns carrying the little girl. The road had three inches of snow on it, pulling, dragging at their feet. At last they came to a well-built, wooden fence. A man was slowly walking up and down the crossroads. He walked up to Paul.

"You have to stop, and turn around," he said sharply. "This road is private."

"Better times are coming," answered Hubler.

The man smiled.

"In that case you can go on. Want to see the Boss? He is up at the house. You look tired. Suppose I carry the baby for you to the end of my beat, and then one of my buddies will help you out. You look tired."

"Not so much tired as worried," acknowledged Hubler.

Soon they were being heartily welcomed by Stafford.

"I thought you people had decided we were not good enough for you to associate with," he said with a laugh.

"It was not that, Mr. Stafford," Ruth replied seriously. "We wanted to make a real effort to get along for at least one winter on our own resources, and we could have done it, only Paul became frightened."

"I bet it was something serious, Mrs. Hubler. Your husband does not impress me as a man who would worry over trifles."

The husband told his story. He told it in the greatest detail, not omitting any of the crimes the various members of the criminal gang had bragged about. He ended with the simple statement:

"I thought you ought to know about it as soon as possible."

"You were right. It looks like a very serious matter. I want to call my advisory group together. We have talked over such a possibility, but so far it has not been a real emergency. I want whatever action we take to be the best thought of not one man, but of all the thinkers in our community."

So, within a short time, Paul Hubler was repeating the story to an earnest group of twenty men, each a specialist in his line of physical or mental endeavor. They listened intently. Then Stafford called on the oldest man of the group, a man who directed the agricultural life of the community. He was highly respected by his fellow workers. He began:

"When I was a young man I had a dog. He was a cross between a collie and a fox hound, and when he reached his growth he was a fairly large dog. Now there were a lot of dogs in that section larger and heavier than my dog, but my dog never lost a fight. When he decided to fight another dog he simply walked up to him and jumped; there was no warning. The other dog was conquered before he realized there was a fight.

"I think we ought to act that way. These men by their own statements have been guilty of murder and worse. They are thinking of killing us, and taking our property. They even talk of taking our women. There is only one thing to do. Surround them and exterminate them."

"You would not capture them and give them a chance to leave this part of the country?" asked Stafford.

"Absolutely no. We might succeed, but we simply expose others to the same dangers we escape from. It would not be friendly. We did not ask for it, but this has become our problem. Let us settle it."

The old farmer sat down.

The vote taken proved that he had voiced the opinion of all present. Then Stafford said a few words:

"Ever since the beginning of the changes produced by the Metal Doom I have been convinced that there had to be an elimination of the unfit. I hope that we will always take care of our aged, but for the criminal I saw no hope. Our social order is too weak to imprison him and support him in idleness, and at the same time we cannot allow the psychopathic personalities to remain at liberty. They are too dangerous to the decent people in any community. I am sure that at the present time there are lions and tigers in our woods escaped from the various Zoological Gardens of our land. If we found one of them, we would kill it. This band of criminals is a greater menace than as many wild animals. There is nothing to do except to protect ourselves. We will leave here early in the evening. Hubler can guide us."

CHAPTER XI

The First Killing

IT would be impossible in a short narrative to completely cover the entire history of this period of the Second Stone Age, or even to thoroughly describe the changes effected. Other historians, no doubt, would stress portions of the transition which this tale completely omits. What is attempted here is to give a general description of the change in civilization, and especially lay emphasis on the new attitude humanity assumed in dealing with problems of life.

For it is a well recognized fact that the leaders in the new social order early realized that the old solutions of old problems could not be of further use to mankind. Everything had changed, and the change came so suddenly that it was fortunate there were many groups of men who were possessed of sufficient intelligence and imagination to see at once the necessity for the adoption of an entirely new code of social and ethical laws.

The events centering around the first killing showed the wisdom of their attitude toward the new laws of society. For centuries the legal profession had made a game out of the matter of law violation. Once a man was arrested for a crime, a game of legal chess started between two lawyers and the question was not so much an effort to establish the guilt or innocence of the prisoner as to determine which lawyer was the shrewdest. Certain phases became shibboleth, such as *EVERY MAN IS INNOCENT TILL PROVEN GUILTY*, and that *NO MAN CAN TWICE BE PUT IN JEOPARDY OF LIFE OR LIMB FOR THE SAME OFFENCE*.

The attitude of the legal profession was deeply appreciated by the criminal of the late electrical age. Irrespective of the blackness or number of his crimes, the arrested criminal asked for every possible consideration from the law, and his lawyers took advantage of every loophole in the law to prevent the administration of justice to the prisoner.

Obviously, all this elaborate legal machinery broke to pieces with the smashing of civilization. There being no jails, there could be no such thing as keeping an accused man behind the bars for several years while his trial was fatally procrastinated till even the ablest witnesses had forgotten what it was all about. There being no money, they could be no more bail, and even straw bonds were an impossibility, for there were no longer any courts.

The partial details of the first killing are given to show the necessity of the act and also to show that the criminal mind had failed to appreciate the change that had taken place in his treatment. Up to this time, the criminal's chief fear was in being arrested. Now a far greater menace faced him.

It was full moon that December night. Paul Hubler, walking silently through the snow, led a company of sixty silent men. They were armed with bows and arrows, spears and stone axes. All of them were expert archers, and had elm bows and yard-long arrows that would have aroused the envy of Robin Hood save for the fact that all the arrows were flint tipped. The snow was just deep enough and soft enough to deaden the footfalls. Talking had been forbidden.

They came finally to the forsaken home of the Hublers. From here on Paul had to show his woods-

manship. He felt sure that he knew the way for the next four miles. Daylight, the first dawn on the white snow, showed him that he was half a mile from the bandit camp. A thin column of smoke showed in the frosty air. There was a short consultation and then the sixty men split into three groups, each of which approached the smoke from different sides. Stafford and Hubler made for the overhanging shelf of rock where Hubler had first heard of the gangster's plans.

The fire was blazing and the convicts were eating breakfast. They were talking about their plans for the day, the capture, plundering and burning the Stafford properties. They said enough to convince Stafford of their guilt, even if he had not been fully satisfied before.

The weird cry of a hoot owl rang through the wood. It was answered by other owls.

And then Stafford stood up on the overhanging rock. "I want you men to listen to me," he said.

The convicts jumped to their feet. Every man seized his club. They were not afraid of one man but they were perplexed at seeing him there. At least they kept still.

"We have your record," continued Stafford. "We know what you have done before today and we know what you were going to do today. We tried you last night and sentenced you."

"Whacherman?" asked one of the leaders, adding a few useless but very powerful obscenities.

Stafford simply put his hands to his mouth, hooted, and the killing began.

From the surrounding wood came the peculiar melody of twanging bowstrings and the swish of arrows cutting the air. The convicts began to fall, clutching at the arrow shafts. Hubler and Stafford had left the rock to join their men.

The surviving criminals tried to find shelter but there was none. They tried to run, but that was useless, the arrows were swifter. At last only two men were standing against the rock. One was a murderer who had first been a lawyer.

Stafford told his men to take their spears and finish the killing. He led them. In fact he and Hubler walked up to the two unwounded men.

"You can't do a thing like this and get away with it," blustered the lawyer. Time had gone backward with him; once again he was in the electrical age, bluffing, twisting, squirming, making use of every legality to evade punishment. "Don't you know this is murder? If we are guilty, why not arrest us and give us a trial? You say we are criminals? Why, you have broken every law there ever was during the last ten minutes."

"Sure thing!" echoed the other man. "You can't do a thing like this. You'll pay for this. Just wait till I get a lawyer."

"We are going to kill you," said Stafford, quietly.

"You can't do it!" yelled the lawyer.

"Can't we?" asked the leader, plunging his spear in, just below the ribs.

Hubler made his kill without comment.

A man came up and touched Stafford on the shoulder.

"All the men are down, Boss, but some of them are just wounded."

"Finish them," was Stafford's whispered order.

"We will leave them where they fell," he said to Hubler. In years to come this place will be visited and those who come will feel that something happened here."

"Something did happen," replied Hubler. "This marks the beginning of a new justice."

Back the men of the community went. Back through the snow. White faced and cold and shivering they went back through the snow.

"I never killed a man before," said Stafford.

"I have," replied Hubler. "I killed a man once who was trying to hurt Ruth. I never did before, but I am going to keep on killing anyone who tries to hurt Ruth or my baby."

"Are you sure it was right? Perhaps we should have given them a chance to fight?"

"They had the same chance to fight that they gave all their victims."

"But that man spoke about law?"

"Mr. Stafford. All the law that man knew is dead."

Back in the community the sixty men were welcomed by their women and children. There was rejoicing over the fact that none had been killed, none even injured. A special dinner was served, and some speeches made after dinner. Not a word was said about the affair of the early morning; it was not even hinted at.

The Hublers were assigned a comfortable bedroom. Angelica was put to bed under a Galloway fur laprobe, which she pretended changed her into a bear. She growled and tried to bite her father.

But at last she decided to change back into a little child.

"I love you, Angelica," said her father, "and I am glad you are a little girl instead of a little boy."

"Thank you," said Angelica, and went to sleep.

Ruth and Paul sat before the fire. Ruth whispered: "Do you know what the night is, Paul? This is Christmas Eve. Centuries ago, on this night, Christ was born in Bethlehem. He came to bring love and peace to the world."

The man shut his eyes. Once again he saw the look of astonishment on the face of the gangster as he felt the stone spear strike him. He looked around the room and seemed to see the dead, stretched on the ground, with here and there blotches of red on the snow.

He held Ruth closer, as he whispered back:

"I wish Christ had been born on some other day."

CHAPTER XII

The First Christmas

DURING the night some of the women had decorated the main hall of the Stafford house. The Christmas programme had long been provided for. There were to be gifts for all the little ones, toys and dolls carved out of wood and bone, and decorated with bits of lace and old dresses, sewed with bone needles.

All of the little community were to eat Christmas dinner together. There was no instrumental music, but all knew the old carols and pleasure and happiness were welcomed guests. The women were happy, the children merry and the men—the men were just a little more serious than seemed to be appropriate.

The food was excellent, meat roasted over the flame, bread cooked in the brick oven, vegetables boiled in earthen pots, all served on china plates and eaten with wooden spoons. There was milk for the little children.

After the dinner there were speeches in plenty, with jokes and laughter. Life was different, but human

nature was very much the same as it had been. Irrespective of changes, life had been kind to those who had sought and obtained the shelter of the Stafford colony.

There were a thousand unanswered questions, ten thousand unsolved problems, but for the minute these were forgotten in the effort to be happy. Just for a minute and then the tide turned.

One of the sentries rushed in and whispered to Stafford. He beckoned a half dozen men with his eyes and walked out of the banquet hall. Out on the front gallery of the house they waited for him, two wild-eyed men leaning against the railing in their exhaustion.

"We have come to warn you," they said. After that, one did the talking, the other falling to the floor and dying there from his wounds. There is a mob of crooks sweeping this way. They are killing and burning everything in their path. They have horses, and they are fast. They heard of your place and swear to eat Christmas dinner here. They killed our wives and burnt our homes."

"How many?" asked Stafford.

"Over a hundred."

"Where from?"

"Up the Hudson."

"Good. Go in and eat. Sorry about your friend. Ring the alarm! Call all the men in."

"Fortunately most of them are here, Mr. Stafford," one of the sentinels replied.

"That's true. It's Christmas. Keep the women inside and we will go out to do our talking. No use worrying them."

Seventy men were all there were in the colony. Stafford did not waste time. He called the names of twenty of them.

"You stay here in the house and guard the women," he ordered, "and the rest of you get your arms and horses ready. We ride to the North Fence. This affair is not going to be a slaughter, it's going to be a fight."

The only argument came from the twenty selected to remain. Paul Hubler was one of them.

"It's not right," he told Stafford. "I ought to go with you."

"You stay. It is all arranged. If anything happens to me you have to help save the colony."

The fifty men never went back to the house. There were no farewells said. They simply went to the stables, saddled their horses, arranged their weapons and rode away.

At every window faces pressed against the glass, women's faces and the faces of little children.

The fifty rode at a gallop to the North Fence. No time to spare. Doom was faster than the feet of horses. But when they came to the fence, no enemy was in sight.

Stafford called out the names of twenty of his best horsemen:

"Leave your bows and arrows here. Take all the horses up to the maple grove. Tie thirty and leave your spears there. Be ready to mount and charge when the time comes. If they break through, come anyway. The thirty of us will stay here and hold them. I do not want one of them to die on our land. We will kill what we can but you have to mop up."

The place was well selected for a battle. The stone fence ran for several miles on both sides of the road. It was bull strong, stallion high and pig tight. It came up squarely on both sides of the road, and across the

road there was a gate. But it was not part of Stafford's plan to close the gate. A closed gate was a warning, an open gate an invitation.

The day passed, and then the sun turned into a red ball of fire. The rouged sky looked angry and cold. Then the riders came into view, a motley, sordid group, laden with plunder and their souls charged with a hundred crimes. They were bad men, not brave, but men who would fight like rats if caught in a trap.

The North Fence looked like one more stone fence to them. They came on at a slow trot. Their horses had been badly cared for, poorly fed, and savagely ridden.

The leaders were almost through the gate when ten men sprang forward and plunged their lances with the fury of desperation into horses and men.

In a minute of time the passage was blocked with a mass of kicking horses and cursing men. And the ten men kept on stabbing with their lances tipped with six inches of sharp flint, stabbing at everything that moved, drawing their lances back and replunging them. Not for nothing had daily practice been held at this use of the spear.

Simultaneously the remaining twenty archers stood up behind the fence and started to shoot. This was archery with a vengeance, not shooting at a mass, but each arrow deliberately aimed at a man. Not a sound from one side of the fence except the grunts of the lancers as they lunged forward and the twanging of the bows as the arrows sped.

Half of the horses were down.

And then the mounted men charged from the shelter of the maple trees. At the beating thunder of galloping hoofs the bandits still horsed, turned, and Stafford, realizing that the fight at the best would be unequal, knowing that soon the arrows would be gone, cursed his stupidity in sending away the thirty horses.

But down along the outside of the fence they came, bridles tied together, two men leading them, and Stafford, with a cheer, ordered his men to mount.

Now the enemy was caught between the hammer and the anvil. They fought. They had to. Armed with clubs they did their best to save their lives and kill. But here were no isolated farmers, overwhelmed by numbers. Opposed to them were picked men on splendid horses, men who had for months been training in the use of the stone ax. Soon the fight had turned into a flight, and the flight into a deadly ending.

Stafford's men came back. That is, most of them came back. Five were killed. During the next twenty-four hours three more died. Stafford sat on his panting horse as his men gathered around him. He looked at them, and then asked:

"Are they all dead?"

"We think so."

"Make sure. Kill the wounded horses; take your ropes and open the gate. We will leave our injured men here under guard till we can send the carts for them. I thank you, my friends, for what you have done this day. I feel that it has taught us a lesson. The day for our splendid isolation is passed."

Later on a man rode up to him.

"Boss, the job is finished. We have no prisoners. But we want to take our dead back with us and the wounded men want to go back. They think they can stand the ride better than staying here and waiting for the carts to come for them."

"How are you going to take our dead?" Stafford replied.

"Please, sir, we thought we would take turns carrying them in our arms. The women would not like it, their women, if we left them here, even for a little while."

Stafford started to cry. Poor fellow! There was no woman waiting for him to come back, dead or alive; he hated to face the other women and tell them the news. He waved assent, spoke to his horse and started the trek towards home.

And the hundred men scattered over the meadows, faces turned toward the growing moon, thought, if they thought at all, that life had played them a scurvy trick.

Once home, every attention was paid to the wounded. After all was done that could be done, the solitary physician took Hubler and Stafford to one side.

"Three of them are going to die," he whispered. "We might save them if we had the instruments, but they all disappeared with the rest of the metals and the stone makeshifts are not much use."

"It cannot be helped," replied Stafford dully. "Tell their women as kindly as you can and—have you any morphine to give them? I do not want them to suffer."

"I have some. You know I asked you to organize an expedition to some city, to see if we could get some drugs, and surgical supplies."

"I know. My fault. I never realized that it might end in a fight to the death. I will, trust me, do the best I can. Right now, I must confer with my advisers and then sleep."

Six of them met in Stafford's office an hour later. Hubler was one of the six.

"Today's affair convinces me," said Stafford, "that we have underestimated the size of this job. In the space of twelve hours we meet and destroy about one hundred and fifty desperate bandits operating in two gangs. Their code of morals is entirely different from ours. Today we were successful. Tomorrow we may fail. We know nothing about what is going on in the world beyond us. We have lived a life of smug contentment, in a world of dreams. If a thousand men had come up to the stone fence they would be in this house now and we would be looking at the moon, like the men we killed. This place made a wonderful stock farm, but I feel it has its limitations as a place to defend against an army. I am not discouraged but I am anxious for the future. This morning we had seventy men. Tonight sixty-five, and the doctor says three more will die tomorrow. What is to be done?"

"Build a fort," replied Hubler. "And tell the world to come and take us. Stop being idealists and dreamers and develop an army of our own. Have other groups join us; and then we can defend ourselves."

CHAPTER XIII

Fort Telephone

THEY all went to bed that night rather exhausted from the unusual events of the previous twenty-four hours. The next morning the council of war was begun.

As a rather delicate compliment, Paul Hubler was called upon to open the discussion.

"Because he has imagination," explained Stafford.

"And that kept me awake most of the night," replied Hubler. "Seriously speaking, I was restless and when I

did sleep I dreamed rather horrible things. It was all because I was sure we were in for a bad time."

"We have learned something about it. Naturally we made some mistakes, but they can be corrected."

"The first thing we have to have is a fort. They largely went out of fashion during the World War, but now, without artillery, in the age of Stone, it seems they would be very useful. I never saw a fort, never helped to build one, but it seems we will need a lot of timber and a lot of stone. Both stone and timber are going to be hard to get without metal tools, but there are a lot of old stone houses around here, and any number of telephone poles. Let us select a hill, and it has to have a living spring on it. Tear down some houses and build four or five towers with little windows in them. Run a ditch around the hill connecting the towers and in that ditch set up the telephone poles touching each other and tied together with ropes. Fill in the ditch, tamp it, and stiffen the poles in the rear with stone and dirt. Have platforms made for the archers."

"Inside the fort have little houses built for the various families. Build store houses. Have enough fodder to keep cattle. Build reservoirs for water. Establish ammunition piles of stone and stores of arrows. Build catapults to throw large stones; train men to aim them and estimate distances."

"But that is just one fort. Try and have our neighbors build another one twenty miles away. Have beacons of wood on mountain tops ready to fire as danger signals. Find out who our allies are and how much we can depend on them. Consider every group of men our enemies till they prove that they are decent people. Learn to fight against overwhelming odds and keep on fighting."

"I believe that for a while all our effort should be spent in perfecting our defences. The greatest luxury we can look for is safety for our women and children. On them depend the security of our future decades. Instead of spending time trying to build looms, and manufacture earthen pots, we, should send to the cities and bring back everything we need. Time enough twenty years from now to learn how to spin and weave—now we must spend our time in perfecting means of security."

"In the first Stone Age, prolonging of the life of the individual and securing the perpetuity of the race were the two great objects of life. In the second Stone Age we must not lose sight of this. Culture, ethics, past education, the fine arts, sciences, all must bow for the time to the securing of safety for the men who are worth while and breeding and rearing of worthwhile children."

"You ask me what I think? My answer is to start tomorrow and build a fort, and when that fort is built start filling it with necessities of life from the cities. It is going to be the work of months. When it is finished will be time enough to talk about the luxuries of life, the culture of the past."

"I think that some of us ought to go on with our special work," said a man who had been a writer of books. "For several months I have been writing a history of this period. I want to go on with it."

"What is the use of a history if there is no one left alive to read it?" countered Hubler.

At this point Stafford took the floor.

"I think Hubler has said all there is to say. We are barbarians living in a stone age and we might as well

(Continued on page 151)

A Sequel to
"The Planet of the
Double Sun"



¶ The Tripeds all wore atmosphere masks, supplied with the vital gases of respiration from small tanks worn on their backs

The Return of the Tripeds

By Neil R. Jones

INIMICAL powers seemed to wield uncanny powers which caused numberless beings visiting the Planet of the Double Sun to commit suicide and homicide among themselves under obviously irresistible hypnotic influence. Now our famous and much-liked Professor Jameson, whose metal-encased brain alone is able to resist this "suggestion," has found the means of discovering the secret of this power and has the author tell us, in graphic pictures, the explanation of the mysterious, wholesale destruction.

Illustrated by MOREY

Prologue

IT was Professor Jameson's theory that all isolated material within the vacuum of space between worlds, whether organic or inorganic, endured forever. With this idea in mind, he built a special, funeral rocket for himself, leaving orders after his death to the effect that his body be placed within the rocket and shot into space. Upon his death in 1950, his nephew, Douglas Jameson, secretly executed the order in the will. Cast into the depths of space, the rocket became a satellite of the earth.

Forty million years later, when all life has become extinct upon the earth, and the atmosphere has nearly wasted away, a space expedition from Zor, a far off planet of the universe, discovers the professor's rocket containing his dead body. Professor Jameson's corpse is found perfectly preserved.

The members of the expedition are machine men, creatures who ages ago achieved immortality by removing their brains from flesh and blood bodies to machine counterparts. Their general appearance is a metal cubed body upheld by four jointed, metal legs. Their upper appendages consist of six metal tentacles while their cubic bodies are surmounted by metal heads. These heads are equipped with a complete circle of mechanical eyes, a supplementary eye looking straight upward from the peak of the head. They converse by means of a high system of mental telepathy.

The machine men remove Professor Jameson's brain from his body, stimulating it into activity once again and placing it in one of their machines. In this manner, Professor Jameson is recalled to life, and he becomes a

Zorome, an immortal machine man. He embarks with the expedition upon a life of eternal exploration and adventure among the suns and worlds of cosmic space.

In their travels, they come upon the planet of a double sun, one of four such planets belonging to the system. One sun is blue; the other one, orange. Weird, birdlike, phantom creatures upon this mysterious world wiped out by hypnotic suggestion all of the Zoromes except Professor Jameson. His mind is impregnable to their subconscious urgings. Professor Jameson, alone in the space ship, passes through the upflung residue of a gigantic volcano. The space craft is thrown out into space beyond the planet's nearer attraction, its mechanism disabled. It becomes a satellite of the double suns.

Professor Jameson, the immortal machine man, is destined to a perpetual existence of undying loneliness. He is left to meditate upon the strange suicides of his fellow Zoromes, and to ruminant upon the strange bones of an extinct race of Triped creatures found upon the planet of the double sun.

CHAPTER I

A Derelict of Space

YEARS passed down the hallways of time and into the dim, eternal past. The wrecked space ship containing its lone, immortal passenger still pursued its lonesome orbit around the bi-luminaries between the first and second of the four planets of the double sun. It had been upon the first world, the planet nearest the double sun, where the lamentable extinction of Professor Jameson's companions had occurred.

Three diversions were left the professor to furnish him occupation. He mulled over the past, he contemplated the future, and his third, and perhaps most entertaining, diversion was the use of the powerful telescopes with which the space ship was equipped. The telescopes represented a boon to him. With their lens he examined all four of the planets, the supermagnifiers bringing into life-size semblance all details upon the first two worlds. The telescopes served to pass the time more quickly, and the professor was less mentally irked by the centuries of solitude he was forced to endure than might have been the case.

Time and again Professor Jameson had attempted the futile task of repairing the wrecked machinery of the interplanetary craft. It was to no avail. The mechanism was wrecked, broken, and beyond repair. The masters who had created it were dead, victims of the evil phantoms, driven to suicide and murder by hypnotic promptings of an irresistible, insidious nature.

Sleep the professor knew not. Sleep would have been a blessing, freeing temporarily his mind from the monotony of existence—the ceaseless existence which was his. But the machine men were not capable of sleep, however, and the professor was denied this respite. The machine men required no food. They had only to live and live and live. When a part of their metal body wore out, it was replaced.

If the professor was denied the oblivion of sleep, he was somewhat compensated by one of his three principal occupations which served as a substitute for sleep, deep introspective recollection. Clearly the professor's past life stood out before him—even to that initial life when he had been an earthman, a flesh and blood creature. Recollection of the past was to him a soothing tonic, relaxing his mind into a coma, its nearest, possible approach to sleep. Contemplation of the future, requiring more of a mental effort, seemed not so restive. But to dwell in the past—that was different.

Often the professor's thoughts would wander back to his old home in the little village of Grenville where he had been a studious scientist of meteorology. He had also experimented with radium, conducting his experiments in conjunction with his interest in rockets. The latter hobby had been responsible for his present condition. Otherwise his bones would have moldered to dust some forty millions of years past.

How uncanny it all seemed. Here in the wrecked space ship of the Zoromes, many millions of light years from his planet Earth, now a dying world, Professor Jameson looked back with amazing clarity upon the scenes of some forty million years ago. But then—most of that time he had been dead—his memories impressed indelibly upon his brain.

Within the remote chambers of his memory the professor once more lived over his earthly existence. He forgot his deplorable situation, forgetting that he was a machine man—immortal—known among his fellow Zoromes as 21MM392. Once more he was in a gay, throbbing world, his ears attuned to the laughter of sentient beings. He became oblivious to his solitude.

And so Professor Jameson dreamed away the centuries of his loneliness within the wrecked space ship when he was not gazing through one of the telescopes. The latter were extremely invaluable to him. With them, he learned many things which served to render his position and future a lighter one in prospect.

An examination of the second planet had brought forth a startling discovery which careful watching later verified. The second planet was inhabited by the Tripeds. They represented a vast population living upon all sections of the globe. There were other creatures on this second planet, but the Tripeds dominated. The third and fourth planets were much too far away for minute details to be distinguished by means of the telescopes, and the professor was not certain as to their being inhabited.

Professor Jameson often pondered the inevitable question which had manifested itself on his discovery of the Tripeds. When he, 25X-987 and others of the machine men had found the Tripeds' bones in the canyon of the first planet, they had believed them to be the remains of the inhabitants of that world. There had been literally thousands of the bleached skeletons scattered in every direction. Then too, there had been the writing and pictures upon the canyon walls.

To which world did the Tripeds belong? Obviously they had made their trip across space in some interplanetary vehicle. This was another mystery which intrigued the professor. He was puzzled by the fact that he saw no space ships upon the second planet. What other reason could there be except interplanetary navigation to explain the presence of the Tripeds' bones on the first planet and living Tripeds on the second? The professor discarded the idea as utterly impossible that two similar races could have sprung up on two separate worlds. His travels among the planets of the Universe with the Zoromes had taught him that such an occurrence represented the wildest and most remote possibility. Then why were there no space ships? The professor merely shook his metal head and wondered.

By their magnificent cities, which Professor Jameson viewed through his telescopes, it was evident that the Tripeds were highly civilized and cultured. Two theories were entertained by the professor. One: the Tripeds' original home had been upon the first planet, but because of the menace of the phantoms they had journeyed to the second world; two: the bones in the canyon of the first planet represented a colonizing expedition from the second planet. The professor was a bit inclined to favor the latter supposition.

Unknown to the Tripeds, the machine man watched them from far out in space. He also watched the shadowy forms flit about the first planet during the double sun's eclipses. How well he remembered the eclipse he had witnessed upon the first world. It had been a nightmare of horror, the phantoms driving his companions to suicide and death, robbing them of all reason so that they had wilfully smashed one another's metal heads, the only death blow a machine man knows.

Hope

THE professor had come to measure time by means of the space ship's revolutions around its orbit which circled the double suns midway between the first two planets. Each revolution he counted as a year. His year was a bit longer than that of the first planet. The second world's year was still longer than his own. Since the space ship had been hurled up and away from the planet by the volcano, there had passed five hundred and seventy-one revolutions of his space craft around the double sun. Year in and year out, the professor watched

the Tripeds and their civilization, a silent witness to all manner of events transpiring upon their world.

Occasionally he examined the first planet, the scene of his last adventures, but there was little to interest him on this world. The bones still lay in the canyon, the great volcano still erupted, and when the blue sun shone by itself upon any section of the first planet's oceans the water animals came out upon the rocks to voice their dismal wails.

Professor Jameson was not destined to remain in his lonely seclusion until his machine parts wore out and left him incapable of movement. Fate held a more active future for him. Of this the professor himself was positive, especially so when one day upon the second planet he described with his telescope an object for which he had vainly looked these many years. He saw a space ship.

Had his machine body been possessed of a heart it would have beaten wildly. He watched the commotion and excitement about the huge object which he saw towed from a large building. That it was a space craft the professor was certain. It was no airship.

The professor had seen the Tripeds' aircraft many times before.

Shifting the telescope's view to other sections of the planet, Professor Jameson saw similar space craft preparing for flight. Questions assailed him. Where were they bound? To the first planet—the third—or the fourth? Perhaps their telescopes had picked out his lonely, disabled space ship? Why had he never seen these space ships before in his telescopic travels over the second planet?

Enigma after enigma piled itself up within the professor's mind. All sorts of solutions presented themselves in a rapid whirl of conflicting possibilities. He must wait and watch; in the meanwhile, conjecture.

Closely and constantly he watched the semi-circle of light which marked the rotating globe. The region where he had seen the space ships passed out of his sight, and as there seemed to be no activity upon the antipode which would point to an interplanetary venture, it was with a bit of impatience that Professor Jameson waited for the great ball to slowly turn upon its axis in a complete rotation.

When the second planet had once more rolled around into a position where his telescope disclosed the landscape he had viewed the previous day, he saw with surprise that the space ships, with the exceptions of one, had gone. There had been eight; only one remained. Seven of the interplanetary ships had obviously embarked into space.

Where were they, and what was their prospective destination?

The professor sought them in the black, velvety depths of the cosmic void. They were doubtless in the vicinity of the second world of the double suns. After much searching with the powerful telescopes, using first one and then the other, he discovered several tiny dots of light. The observing telescope, under the manipulation of the machine man, brought them to large size, revealing the sunlit sides of seven ships of space. He studied their route of travel. They were coming his way. Would they discover him.

But then, the first planet also lay in his general direction too, and it was to this world they were probably bound.

The Return of the Tripeds

THE seven elongated cosmic flyers were apparently headed for the first planet. Unceasingly the professor watched them, and saw the space craft approach nearer and nearer as many rotations of the second world transpired. They had been many days upon their journey already. How slow their progress in comparison to the speed of a space ship of Zor. As they came nearer, his hopes and fears rose. Would they discover his ship and release him from his plight? Were they possessed of sufficiently powerful telescopes to pick out his disabled space craft?

The supreme moment upon which the professor had gambled his hopes finally came. The Triped interstellar expedition was now at a point which would designate whether their attentions were focussed upon the first planet or his helpless space ship. Anxiously he waited and watched. His anxiety gradually resolved itself into apprehension, and from apprehension to dismay. At several thousand miles distance, they passed him and continued on in the direction of the first planet.

Relaxing his patient vigil, he left the telescope in disappointment. He held one consolation, however. Sooner or later, he believed, they would find him. It seemed inevitable now that they had taken to space navigation. For a long time he gloomily contemplated the wrecked mechanism in the control room. After a while the professor turned once again to the telescope to note the position of the space ships from the second world. He was surprised. Where there had been seven he now saw only six. Where was the other one? He peered sharper. Perhaps it lay behind one of the others. No, he concluded, after a more careful examination, there were but six. Where was the seventh? He swung the telescope slowly about in search of it. A magnified space ship presently engulfed his field of vision, surprising him with its sudden appearance. It was the missing craft, and loomed up large in his sight. It was headed straight for his wrecked ship!

So they had seen the derelict of space after all. And they were coming to satisfy their curiosity. Not all of them. Only one came to investigate, intent on joining its companions later.

For the first time since that far gone day when he had been vomited from out of the volcano's lake of fire in the wildly careening space ship, Professor Jameson experienced a bit of excitement. The Tripeds were coming to investigate his mysterious craft, now a satellite of the double sun! What would they do? Especially when they learned that the mysterious craft held an equally mysterious occupant? What would be their attitude and conduct toward him? The machine man wondered, fully alert to cope with any situation which might arise. He hoped for the best.

The longest moments of his life were those consumed between the moment he discovered the solitary ship of the Tripeds approaching him and its arrival alongside the derelict of the Zoromes. Time does not exist except as an invention of civilization, being merely a plane along which consciousness moves. Professor Jameson recollects how his death period of some forty million years had seemed to him but a few brief moments.

Certain sections of the disabled space ship were transparent, and the machine man walked before these full in

sight of the other craft to reveal to the Tripeds that the derelict held a living creature. How could he communicate with them, he wondered, now that they knew him to be within the lonely space craft? He pondered the question a moment before reaching a decision. He would try mental telepathy. He was uncertain concerning the receptive abilities of the Tripeds, but he could try. He knew they used a sound speech, for he had often watched them talk while viewing the second planet through one of his telescopes. He put forth a strong mental suggestion.

"I am a friend."

He waited a moment and then repeated the suggestion many times.

"I am a friend."

He waited. Then:

"Do you get my message? Do you understand?" He paused. "If so, let me know by maneuvering your space ship to the other side of mine."

Professor Jameson waited patiently and expectantly for some sign which would reveal success in his efforts at communication. For a moment nothing occurred. The professor became doubtful. Then the Triped ship swung around in front of the derelict. They had received and understood his telepathic request. He waited for an answer. Hearing none, he realized the Tripeds' inability to respond by thought projection. He believed that were he to see them, he might read their minds.

CHAPTER II

Rescued from Eternity

MY ship's mechanism is destroyed," he told them. "Tow me to the planet where you are going."

The professor had no idea as to how they would accomplish this, but left the details to their ingenuity. He was surprised to witness the alacrity and capability with which they handled the situation. The Tripeds shifted their space craft back and forth before the cosmic derelict until finally they appeared satisfied with the relative positions of the two. From the ship of the Tripeds there projected a long cylinder ending in a broad metal ring. It touched the side of the wrecked space ship and clung. The Triped craft moved away with the salvaged derelict which was locked into contact with the cylindrical shaft by magnetism.

The Tripeds' space flyers had been equipped with these appliances in the event of an emergency. They were capable of exerting a strong, magnetic attraction, and were for the relief of one of their space craft should it become disabled, necessitating its being towed.

Exultation possessed Professor Jameson as he felt the Tripeds' space ship tear his wrecked craft from the orbit to which it had clung so long, carrying it towards the six distant space flyers which continued on their way to the first planet at a reduced speed. They rapidly overtook the six space ships. Curious eyes watched the strange machine man who stood in plain view behind the transparent facing of his craft. Little did they guess that for many generations this weird metal man from another world and a far gone past had watched them and their ancestors.

Once more the bevy of space craft swept onward through the dark, cosmic void towards the first planet of

the bi-colored suns. Bright lights from the seven ships of the Tripeds shone full upon the wrecked craft, which one of their number towed behind it. The black of space was replaced by a soft suffusion of glow which gradually grew brighter as they penetrated the ocean of atmosphere surrounding the planet.

Once more the bevy of space craft swept onward through the innermost planet of the double sun. Before, it had carried fifty-one machine men where now there was but one. Once more Professor Jameson gazed upon the unrivaled splendor of beauty limned in double colors of harmonizing blue and orange. But the machine man knew this elegance to be but a mockery. A sinister influence lurked invisible upon this strange world, ready to wreak havoc with all living creatures, threatening death and disaster. The indescribable beauty of the planet represented a veritable siren of death.

Professor Jameson was anxious to communicate with the Tripeds. The space ship had no more than landed, when he opened the door and sprang out. He felt he must warn them at once of the frightful menace of the phantoms who would exercise their insidious powers when the orange sun sank below the horizon, leaving its blue contemporary to shine alone. Perhaps they already knew of the phantoms. He would soon find out, he hoped.

Slowly the door in one of the space ships opened, and a strange, three-legged creature walked out. Professor Jameson obtained his first view of a living Triped at close range. The creature possessed three legs and three arms. The spherical body was surmounted by an oblong head equipped with three eyes arranged in triangular fashion. The general color of the Triped was red.

As Triped and Zorome surveyed one another in surprise and curious regard, the Triped being the more amazed of the two, the rest of the Tripeds emerged from their space ships. To Professor Jameson's mechanical senses of hearing there came a low, gibbering chant of syllables as the Tripeds conversed among themselves. The machine man watched them closely, finding to his satisfaction that he could read their thoughts easily.

The professor made a mental inquiry.

"Why did you come here?"

This was instantly answered by a concerted bedlam of sound as the conversation waxed hot. One of the Tripeds, evidently a leader, stepped forward. Like the rest of the Tripeds, he was without clothing of any sort, but around his neck the red color of his rough skin was marked with green spots. He jabbered for a moment at the machine man, pointing upward occasionally to the two solar spheres. The professor paid no attention to his words. They were incomprehensible. He studied the Triped's mind. It was a bit confusing. The thoughts of the three-legged creature were a whirling chaos. Evidently he was explaining something—perhaps asking questions too.

The Tale of Glrg

IF the Triped would only cease talking and concentrate upon whatever he wished the machine man to know, he would be understood, Professor Jameson believed. He told him as much.

"I know not your language. Tell me in your mind what you would say."

The Triped resorted to this medium of exchange of thoughts, his efforts met with success. Translated to

words, their conversation would have run like this:

"Where do you come from, metal man?"

"I came with a space expedition from a far off planet of another sun. We landed upon this planet. When the blue sun shone alone, strange hummings and wailings drove my fifty comrades to kill one another and commit suicide. What are you here for? What relation do you bear to the bones we found scattered about the planet? They resemble your people."

"They are our people," replied the Triped. "They were killed even as your comrades died."

"Did you live here originally?"

"No. The bones you saw were those of a colonizing expedition. For a long time the members of the expedition resisted the phantoms, but they finally succumbed one by one. The second planet is our original home. Seven hundred years have passed since the great catastrophe occurred upon this world."

"Seven hundred years—the years of this planet—or your own world?"

"Our own world."

"What is the length of your lives?"

"An average of two hundred and fifty years."

"This happened nearly three generations ago?"

"Yes."

"It has been well over four hundred of your years since we visited this world, and nearly eight hundred of this planet's years. My friends were all killed."

"As long ago as that?" the Triped queried, plainly astounded by the machine man's statement. "Don't you ever die?"

"Machine men never die unless their brains are injured or destroyed," replied Professor Jameson. "Otherwise, we machine men are immortal."

"Your space ship was discovered a hundred and fifty years ago by one of our astronomers. At first it was overlooked as merely a large meteor, and no attention was paid to it. What happened to your ship?"

The professor then told his entire story, beginning with his departure from the earth in a rocket containing his dead body. He told of the Zoromes, and how he had become one of them himself, explaining that once he too had been a flesh and blood creature like the Tripeds, though dissimilar to them in form. He elucidated to them the manner in which his companions had all met their deaths, and how he had narrowly escaped a fiery finish in the tremendous holocaust of the great volcano, his wrecked space ship being thrown out between the two worlds to become a satellite of the double sun.

"It is wonderful!" exclaimed the Triped.

The entire group of creatures sat silent, taking in the thought transmissions of Professor Jameson.

"Why did you wait seven hundred years before returning?" asked the professor. "Didn't you use space craft during all that time?"

"That is a story by itself," explained the Triped, whose name the professor later learned was Glrg. "Briefly it is this: Our expedition to this planet was the second of our initial trips following our conquest of space and a realization of the ability to journey to other planets in our system. Living on the second planet (here the Triped gave voice to a name which sounded to the professor like Grvdlen), we first of all explored our moons and the nearer planets. We found the third planet (Uzblt) devoid of all life. Here upon Trulfk we found, even as you machine men discovered, a beauti-

ful world. We have never been to the fourth and last world of our system, Klpfud."

During the discourse, Glrg constantly referred to the Tripeds as Grvdlns. We shall, however, continue to call them the Tripeds.

"This fourth world is far out in space, I observe," commented the professor. "You dared not journey that far?"

"Not until we felt we were more experienced," continued Glrg. "As our planet was overcrowded, and this one offered such an enticing existence, we decided to move a large fraction of our population here. We did. What you found in that canyon represents a good example of what happened. As I say, for a long time we resisted these hypnotic promptings, putting up a hard, determined fight. It was no use. We finally discovered these malignant creatures to be within a different dimension and out of our reach. What remnant of our forces there were left flew back across space once more to Grvdlen."

In rapt attention, the professor followed the story of Glrg, the Triped. Now he interrupted.

"And since the exodus from Trulfk to Grvdlen, this is your first trip?"

"Yes," replied Glrg. "Even as strange as it may seem, this is the first time in seven hundred years we have made a venture into space."

"Why?"

"Because when our forces came back from Trulfk they found the home world in a chaos of civil war. The space ships were destroyed by the radicals along with other public equipment. The radicals were triumphant, but their reign ended in anarchy, ruin and disorder. Our scientific progress degenerated. Only lately have we built up our civilization to a standard where we rediscovered the principles of space navigation and built space craft once more."

An Oath of Vengeance

I WATCHED through many long years your gradual rebuilding of civilization," stated Professor Jameson. "Of course, I did not understand a great deal of what I saw."

"You watched us?" queried Glrg.

"The space ship of the Zoromes is equipped with powerful telescopes. For more than five hundred years I have watched your progress."

"It must have been interesting."

"Though lonely," added the machine man. "Until I saw your thriving world and associated your people with the bones in the canyon, I believed myself doomed to eternal solitude within my wrecked space flyer. When I saw your civilization upon the second planet, I believed that some time you would come and find me."

"Your beliefs were not ill founded," said Glrg. "For a long time we have seen through our telescopes your space ship traveling upon an orbit beyond ours, but we scarcely believed it to contain anything living."

"I have not yet asked you why you have come back to this first planet," said Professor Jameson. "Don't you fear the phantoms?"

"Not now!"

"Why so?"

"We are prepared! Our mission is one of vengeance!"

"Upon the phantoms?"

"Yes!"

"But they are intangible—inaccessible."

"Not to us now," spoke Glrg with confidence. "We are going to rid this planet of their hideous presence. Then we shall colonize it once more."

"But how can you come into actual grips with them?" asked the professor. "Our destroying ray did no good in achieving that purpose, and our ray will disintegrate any known element."

"We shall enter their dimension and destroy them!" exclaimed Glrg.

The professor gasped.

"Enter their dimension?"

"Yes!"

"Have you discovered a way?"

"We have!"

"But what of their hypnotic powers? Will they not kill you off even as those who came before you died?"

"We have provided against that," stated Glrg. He turned to a subordinate and spoke a few words, and again addressed the machine man. "I shall demonstrate to you."

The subordinate returned with a queer headgear which Glrg placed upon his head. A strap went in under his chin. From the top of the strange looking hat projected four glistening knobs coated with an iridescent metal.

"We are all equipped with these hypnotic nullifiers, or mind protectors," said Glrg, "and the hypnotic forces of the phantoms (here Glrg gave voice to a sound which described the phantom bird folk of the invisible dimension as 'Emkls') will have no effect upon us whatever. We have equipment which will send us into the Emkls' dimension, and then we shall kill them off."

"But it will be an unknown world," argued Professor Jameson, "and you know not what dangers may beset your path."

"Nevertheless, we'll chance it!" stated Glrg adamantly. "We shall have revenge upon these accursed devils, and rid this otherwise beautiful world of their evil scourge!"

Some of the fires of Glrg's vengeful feelings reached Professor Jameson. He visualized, as he had visualized many times during his solitude within the space ship, his friends, the Zoromes, succumbing to the vicious lure of the Emkls. Once again he saw his companion, 25X987, taking the fatal leap; he remembered how 149Z-24 had frantically sought to kill him; he recollected how many more of the Zoromes had either taken off their heads and smashed them down into the canyons or else leaped into the chasms head first. Now that it lay within his power, he, too, was inspired with revenge, a cold, calculating revenge, however.

"May I go with you?" he asked.

"Of course—if your metal body will undergo the transition."

"Good," stated the machine man. "I, too, have a personal score to settle with these Emkls."

He looked upward to where the suns shone benignly upon the world of Trulsk.

"You will soon have an opportunity to test your hypnotic nullifiers," he informed the Tripeds. "Look."

The three-legged inhabitants of Grvdlen followed the direction of the machine man's waving tentacle with their triangular arranged eyes. The orange sun neared the sky line. It would soon vanish beneath the horizon.

The Hypnotic Nullifiers

THE reign of the blue sun would usher in a dismal period of horror in which there would come melancholy hummings and wailings from an invisible world about them. Strange, terrible promptings of an insidious nature would attempt breaking the morale of living beings, bending their will to involuntary suicide and murder. The creators of these abominable manifestations were invisible except at a time when the orange sun eclipsed its blue contemporary. At such a time they became partially discernible to their prey.

Professor Jameson now listened to the excited conversations of the Tripeds which he did not understand. In and out of the space craft they scurried, donning the mind protectors which would render them impregnable to the irresistible urgings of the hellish creatures they were unable to see. The orange sun's burnished disc sank out of sight beyond the distant hills. In the deep blue light there now stole over the group a depressing mood of ill-omened fatalism.

"We have no paraphernalia to protect you," stated Glrg to Professor Jameson. "I shall be glad to protect you by locking you in one of the space ships with several of the crew, however."

"I need no protection," replied the machine man. "In brain structure I am as unlike the Zoromes as they were unlike you. The Emkls do not represent a menace to me no matter how hard they try. That has been proved."

A low humming drone sang upon the air. The Tripeds commenced to chatter among themselves excitedly.

"Silence!" ordered Glrg.

The humming grew in volume. Now it was punctuated by a sad, drawn-out wail. The Tripeds and the machine man waited, watching one another to see whether or not any hypnotic effect was registered among them.

"We must make this a thorough test," said Glrg. "Free your minds of any resistance. Leave them open to suggestion. We must be assured of our headgear's invulnerability."

The rest of the Tripeds immediately complied with their leader's suggestion, patiently waiting. The humming became more intense and sustained, the wails shrieking down among the expedition from Grvdlen, the weird calls becoming more insistent.

"I wonder if they see us?" queried Professor Jameson. "I've often wondered whether or not they possessed this faculty during the sole reign of the blue sun."

"I believe they do," opined Glrg. "It is handed down among the Tripeds that the Emkls really do see this dimension during the period of blue sunlight, though no one ever knew for sure."

All during the reign of the blue sun up until the shroud of darkness settled over Trulsk the Tripeds sat and waited patiently to discover the qualities of their mind protectors. Glrg appeared satisfied.

"They are a success," he concluded.

Professor Jameson was taken into the various space ships and shown the equipment which the Tripeds had brought from their world to carry into combat against the Emkls.

"Are you sure the Tripeds will be able to return from the dimension of the Emkls as easily as they go?"

"Yes," replied Glrg. "All that is necessary to effect a return is to reverse the action of the mechanism in our

transition cube. Half of us will remain here. The rest will enter into the world of the Emkls."

"Will there be communication back and forth?"

"No," replied the Triped. "All communications will be cut off."

For several days Professor Jameson roamed the planet of the double sun with his new found acquaintances, the Tripeds. Once more they viewed the mute bones of their three-legged predecessors. They also found wrecked and twisted parts of metal belonging to the Zoromes. During this time, the Tripeds made their plans and prepared for an entrance into the other dimension, the habitat of the sinister Emkls. The day finally arrived when all preparations were completed.

Professor Jameson, with his three-legged companions, stood before a huge, cubic compartment of transparent material through which the two suns spread their blue and orange rays.

"The air has been pumped from the chamber," announced Glrg.

By this time, the professor had learned the rudiments of their speech, and was enabled to understand them both from mental and physical standpoints.

"Are you still insistent in your desire to accompany half of our expedition into the other dimension?" inquired Glrg of the machine man.

"I am," replied Professor Jameson. "I shall do everything within my power to further your ends and aid those who go with me."

"Very well," said Glrg. "You will enter the chamber."

The machine man and forty-two of the Tripeds entered the compartment's air lock. The Tripeds all wore atmosphere masks supplied with the vital gases of respiration from small tanks worn on their backs. Professor Jameson, whose metal body required no air for bodily sustenance, was without this equipment. He carried, however, one of the ray guns from the wrecked space ship of Zor. This, he believed, would come in handy.

CHAPTER III

The Transition Cube

THE air was withdrawn from the air lock, leaving the machine man and his three-legged allies in a vacuum. Through the transparent sides of the hollow cube they saw the balance of the Tripeds watching them in anticipation of their disappearance into the invisible dimension.

From several discs at the far end of the chamber, weird lights of a blue-green intensity were thrown over the assemblage within the cube. To the eyes of those about to be transported to another world, the forms of those outside became vaguer and less sharp of outline and detail. The Tripeds about the professor seemed to assume vivid green hues of varying shades. The sides of the cube were no longer transparent—in fact they were no longer visible. They had become lost in the heavy, blue-green haze. The transition to the other dimension was having a curious and alarming effect upon the Tripeds, the machine man observed. They were staggering about wildly and falling over one another, slumping downward out of sight to rise no more. He lost sight of them in the heavy, impenetrable, green luminescence. He saw them disappearing around him one

by one. It was not a case of fading from sight. They merely dropped out of sight below the level of his feet somewhere as if the bottom of the cube had opened to swallow them.

He dropped downward, reaching—ever reaching. His metal tentacles encountered the glazed surface of the cube's interior. For what seemed a long time, the professor stood there in this manner. The Tripeds who had accompanied him within the cube had all disappeared. Where were they? What had become of them?

Had he been transported to the world of the Emkls, leaving his three-legged companions behind—or was he the one who had been left behind? As he ruminated upon the question, one of his roving metal tentacles brushed in contact with an object which rattled and scraped against the floor on which he stood. He brought it forth from out of the green haze to discern its identity. Within the curls of his tentacles he saw the object to be a Triped's air mask.

The machine man took several steps in the direction where he knew the nearest wall lay. His metal limbs stumbled over several more objects. He picked them up, finding more air masks, mind protectors and other articles either worn or else carried by the Tripeds on their expedition into the dimension of the Emkls.

Suddenly, without warning, the blue-green haze disappeared, and the professor found himself gazing through the transparent sides of the cube once more. Outside thronged the Tripeds, those of the expedition who had been left behind. Within the cube, Professor Jameson found himself alone, alone except for the variety of objects scattered about the floor of the transition cube. His forty-two companions were gone. They were obviously in the other dimension. Why had the cube failed to send him with them?

Gazing in stupefaction at the array of articles upon the floor, the solution of the mystery presented itself to him. The articles left behind by the Tripeds in their transition into the invisible dimension included everything of metal which they had either worn or else carried. There were metal weapons, air masks, hypnotic nullifiers, trappings and ornaments. The machine man even saw a metal ring which he recollects as having seen around the neck of a Triped.

Meanwhile, as he watched the surprised Tripeds crowding about outside the metal cube and staring in at him, he heard the hiss of air as it entered the chamber. The door was opened and he walked out through the air lock. Instantly he was assailed by a multitude of queries from the excited Tripeds who jostled about him in intense excitement and fearful anticipation.

"Where are they?"

"Are they dead?"

"What happened?"

"See—their air masks have all been left behind!"

Glrg came to his rescue, silencing the Tripeds and commanding order. When comparative quiet reigned, Professor Jameson essayed an explanation. The Tripeds strained their mental faculties to receive his rapid telepathic thoughts as he related the occurrence within the cube.

"The green haze spread over us—the walls became invisible—we could see you no longer! My companions began dropping out of sight into the floor one by one! Vrazr, at my elbow, was the first to go! Then they were all gone, leaving everything of metal, including myself!"

"They are in the other dimension!" shouted one of the Tripeds in excitement.

"Unarmed and without air masks!" cried Glrg in anxiety, realizing the danger in which his departed companions stood.

"Perhaps the atmosphere of the other world is like that of this dimension!" offered the professor.

"A possibility of which we are not sure!" exclaimed Glrg.

"The metal!" shouted Brlx, chief operator of the transition cube. "Why didn't the metal enter the other world with them?"

"Because it is apparent your machine is not capable of transferring metal to the other dimension," stated the machine man. "Inorganic material does not respond to its forces."

Another of the Tripeds hurried to the side of Brlx.

"May I suggest that we did not use a sufficient intensity of the rays? Metal is a great deal denser than material born of organic origin."

"It appears plausible," agreed Brlx. "We shall try again!"

"Are you willing to try again?" asked Glrg of the machine man.

"Certainly," agreed the professor.

The machine man re-entered the cube. The air was once more pumped out, and as before the blue-green rays sprang from out of the several discs to envelop the machine man in a heavy haze. This time it increased to such an intensity as to make invisible the machine man's tentacle before his very eyes.

Into the Blue Dimension

PROFESSOR Jameson's senses reeled, and desperately, but in vain, he attempted to maintain a hold over his faculties. His brain rolled into oblivion, and his final thought was a truly terrifying one. It suddenly occurred to him that he stood in danger of being deprived of his brain, which, after all, was of organic origin, leaving his useless metal body in one dimension while his equally helpless brain progressed to another. With fear clutching at him, the professor knew no more.

When his senses returned, they were accompanied by the sensation of a short fall. His metal body appeared racked by a severe jolt. The intense, blue-green mist had now faded to a blue translucence through which the professor commenced to dimly perceive objects which fell at his feet with distinct thuds. The machine man instinctively guessed that he was now in the dimension of the phantom bird folk. As his senses became clearer, he saw that the objects which had apparently materialized about his head and had fallen to his feet were the metal accoutrements of the Tripeds which they had previously left behind them.

The professor looked about him. He stood on a hillside. Above, a blue sun beat down its azure rays. The orange sun was nowhere in sight, evidently invisible to this blue dimension. He looked for his friends. Their recumbent forms twisted in various poses upon the sward rested where they had fallen. Instantly the phenomenon of the Tripeds dropping through the floor of the cube, his own experience of falling a short distance, and the materialization and fall of the metal equipment were all solved. The surface of the blue dimension at this point was slightly lower than that of the other world.

It was a contingency which neither the Tripeds nor Professor Jameson had anticipated. The machine man disliked dwelling upon the possibilities offered had the surface of the blue dimension been far enough below that of the orange and blue dimension to have incurred a destructive fall. On the other hand, had the conditions been vice versa, in all probabilities he would have found himself buried beneath tons of the planet's strata.

The professor was aroused from his meditations regarding the dissimilarities of these respective spheres of existence by a horrible sight which met his wandering gaze. A hideous monster on two stilt-like legs was carrying off the body of a Triped. Others of the tall creatures were approaching from out of the distance in long strides. The long legs were surmounted by grotesque, fuzzy bodies all out of proportion to the long, thin legs which upheld them. The body resembled a spider's except that it had no visible head. Indeed, the machine man could see no eyes—only two waving antennae which sprang upward from the fuzzy, round body. Two long claws situated midway between the walking appendages clutched the senseless, perhaps dead, Triped in a firm embrace.

Swiftly the machine man raced after the weird creature only to meet with sudden, startling reverstement. On coming close beneath the animal which, though smaller of body, towered over him, a well directed kick of the creature's long leg bowled him over. The fuzzy monster then attempted an escape but with amazing alacrity the machine man wrapped a tentacle about one of the stilt-like legs. It was a firm hold which his adversary could not break, and Professor Jameson felt himself dragged across the ground. Two more of the monstrosities joined the first. Evidently they were coming to reinforce their companion, but the professor feared them not. He appreciated the invulnerable qualities of the machine body which was his, and realized that it would take many more than three of the strange animals to subdue him. What he did fear, however, was the possibility of their getting away with their prey, Snrpd, the Triped.

The Menacing Stilt Walkers

AS the two newcomers joined their companion, a surprising occurrence took place. Professor Jameson looked for some sort of an attack. There was none. Instead, the machine man witnessed as unexpected a situation as had ever occurred in his long life of adventure and exploration with the machine men of Zor.

The long legs of the creature to which he clung dropped off as the fuzzy animal transferred his inert burden to one companion and leaped upon the back of another. The machine man held within his grasp the elongated limb of the creature as he watched the three scurry off in long strides toward a distant forest, his late adversary clinging to the back of a companion. The third creature carried the helpless Snrpd.

Professor Jameson wasted no time, but hastily returned to the spot where he had first seen the light of this blue dimension. He sought for and found the object he desired. It was the ray gun. Swiftly he raised it, pressing the butt. From it there leaped through the blue sunlight a dull red glow. Cautiously, so as not to touch the Triped, he directed the destroying light upon Snrpd's abductors. The one bearing Snrpd fell in his

tracks, releasing the unfortunate Triped. The one bearing the other on his back had his legs cut from under him. As before, the creature immediately abandoned the stumps, and the one on his back released its hold. Each one attempted scurrying off at a slow, awkward gait. Professor Jameson relentlessly dispatched them, hurrying forward to where they lay.

To his increasing surprise, he found that the long limbs from which the fuzzy animals became independent at will were not a part of the creature at all. They were artificial limbs employed as stilts. Evidently the creatures were of some intelligence.

He hastened to the side of Snrpd, examining him carefully. Professor Jameson was glad to find the Triped alive, though unconscious. If he lived, then of course the rest did. Upon the heels of this thought came a hail from behind the professor. Turning, he found Clbg rising weakly to his feet and calling to the machine man. Others of the Tripeds were stirring and attempting to rise to their three legs, evidently experiencing some difficulty in doing so.

"How do you feel?" asked the professor. "Are you quite all right?"

"I feel dizzy and weak," explained Clbg as he essayed to stand upon his feet.

"How do your lungs react to the air here?" inquired the machine man anxiously. "Can you continue to breathe this atmosphere safely?"

"My lungs appear to be functioning without any added effort," replied the Triped. "The air has a vague, sweet odor. It is strange. My limbs seem cramped as if I had fallen."

"You did fall," stated the machine man.

"I did?" queried Clbg in surprise. "From where?"

"From the other world." And the professor went on to explain the slight difference in elevations of the two dimensions at this point.

The remainder of the Tripeds collected around Clbg and Professor Jameson. Soon, Snrpd, unaware of the recent tragedy enacted, in which he was a principal figure, came limping over to the group. In turn, the machine man questioned them all concerning physical reactions following the transition to the blue dimension. He then related to them how it had taken two attempts on the part of Brlx to send him and the Triped's metal accoutrements into the world of azure sunlight. He also pointed to the remains of the three fuzzy stilt walkers some distance away, relating the episode concerning the capture of Snrpd.

A humming drone broke in upon their conversation. There followed a piercing wail.

"The Emkls!" shouted a Triped warningly.

"Your hypnotic nullifiers!" shouted the professor above the rising tide of excitement. "Put them on!"

In mad haste the Tripeds donned their protective paraphernalia which lay scattered over the nearby turf, and which had entered the blue dimension with the machine man. From the headgear of each Triped there glistened four knobs of oddly changing colors.

Turning the Tables

THE Tripeds gripped their strange weapons which the machine man had seen them use so effectively time and again within the last few days prior to their entrance into the blue dimension. The guns used

charges of energy as ammunition. When one of these charges hit an object, the latter exploded.

From down out of the sky there soared fully a score of the huge, birdlike creatures on their leathern wings. They reminded Professor Jameson of bats. They resembled them somewhat in certain particulars.

"Don't shoot at them until they fly low about us," admonished the machine man. "Then we'll get them all."

Patiently they waited. The phantom creatures were no longer phantoms. They represented grim reality. Their figures showed up clear and black against the azure sky. With dismal wails and a constant humming, they circled the group of explorers and avengers from the world of the orange and blue suns. Within their cryptic wails, Professor Jameson sensed vaguely the insistent urging they were exerting upon these bold invaders who had so rashly penetrated the fastness of their hitherto inaccessible domain.

The Emkls flew lower and lower, apparently surprised at the futility of their initial efforts at breaking the morale of these three-legged animals and their metal companion. The hypnotic promptings were failing to accomplish their object. The insidious Emkls circled lower, their great wings flapping dismally upon the air. Still Professor Jameson abstained from giving the command to annihilate these malignant creatures.

Finally, one of their number separated itself from the group and swooped downward over their heads. With a terrifying wail bordering upon a scream, it passed above them a short distance. Another and still another of the Emkls followed the initiative of the first. Clearly the professor discerned the blank, staring eyes set in the hideous, round heads. The entire horde of some twenty Emkls now flapped downward about the heads of the Tripeds. Professor Jameson gave the order to attack.

From the weapons of the Tripeds there burst forth a series of shots into the onrushing Emkls. Pandemonium reigned as the shots took effect. The wails and humming turned to screeches of pain and rage which were silenced as explosion after explosion exterminated the Emkls. They were literally blown to pieces. The few survivors strove to escape the devastating weapons of the Tripeds.

Previously, the Emkls had been all-triumphant. Secure in their own dimension, intangible to the creatures of the other dimension, they destroyed the latter at will by hypnotism. They had come to take their strange powers and invulnerability for granted. Safe from attack, lords of all living beings in their own world, they had never dreamed of danger to themselves. Now it had come to them. They were no longer inaccessible to their enemies.

Four Emkls, rising ever higher in the air, wailed and screeched their way on wing above the invaders. From Professor Jameson's ray gun there shot a lurid glare which settled upon the lowest of the four escaping Emkls. Without another cry, half destroyed by the disintegrating qualities of the machine man's weapon, the creature plunged to the ground. The three remaining Emkls were now beyond range of the deadly weapons employed by both the machine man and the Tripeds. Their faint cries now dwindled away, and their specks became lost below the horizon.

"Our first taste of revenge!" shouted Dnkt.

"And sweet, too!" spoke Ravlt in elation.

"We'll kill their entire population!" said another.

"We must send someone back to report to Glrg and Brlx!" announced Snrpd.

"And bring back two airships," added Professor Jameson. "There is room for two within the cube if one side is opened for their entrance. Two will be sufficient for our needs at present."

Ravlt, in joint command with the machine man, picked two of the Tripeds to enter back into the dimension of the other world to report their condition and bring back aircraft with which to carry on the fighting against the Emkls.

"We shall soon receive a signal from Brlx," stated the professor. "Prepare to send our messengers back at once."

"Dlb and Ldgz will go," said Ravlt.

"A platform must be built," informed Professor Jameson, "so that Dlb and Ldgz will be upon a level with the cube."

The platform was soon built, and the two Tripeds mounted it, waiting for the return to their own dimension. It had been previously arranged with Glrg and Brlx that at regular intervals the action of the transition cube would be reversed so as to afford periodic returns to the blue and orange dimension.

At the predetermined time, the invaders of the blue dimension witnessed a startling transformation about the two Tripeds who waited patiently upon the platform. The intense green hue of the cube surrounded them, gradually rendering their shapes fainter in outline until eventually they disappeared. Only a thick, green haze of cubic dimension remained. Suddenly this, too, disappeared, leaving only the empty platform the Tripeds had built.

CHAPTER IV

Air Raiders

THE Tripeds and machine man saw no more of the Emkls or the fuzzy animals who employed stilts in their perambulations. In fact, none of the inhabitants of the blue dimension were seen since the departure of the Emkls to the time the blue sun sank to rest below the horizon.

Night reigned. Strange groups of stars which Professor Jameson had never seen before came out to set the sky atwinkle. No nocturnal sounds disturbed the tranquillity. All was silence.

In the midst of the darkness there suddenly shone a green cube whose brilliant hue increased, presenting an opaque wall of green against the night sky. The Tripeds jabbered excitedly. The professor knew that it heralded the return of Dlb and Ldgz with the aircraft. As the green light disappeared, there hung above them in the air two long, pointed airships ready for flight. The two Tripeds, Ldgz and Dlb, brought the ships gently to the ground.

The machine man and his three-legged companions waited patiently for the dawn. They would then cruise over this strange world to which they had been transported by the scientific sorcery of the transition cube. At last they had come to grips with the Emkls, those wraiths who had spread their hypnotic scourge across the portals separating two dimensions, the blue from the orange and blue.

"We are certain that one of our previous theories has been exploded," said Professor Jameson.

"And what is that?" asked Snrpd.

"The world of Trulfk from where we just came is not visible to us from this dimension as we had supposed."

"But the Emkls appear to encounter no difficulty in seeking us out."

"True," agreed the machine man. "The Emkls must be possessed of an occult sight akin to their hypnotic qualities which would enable them to look into the other dimension when the blue sun shines alone."

Dawn came with a blue, luminous flush of light. Then up above the skyline there rose the azure orb visible to both dimensions. Professor Jameson wondered whether or not the orange sun had risen. There was no way of telling, in view of the fact that the orange sun was invisible in this dimension.

"We are ready," announced Ravlt.

"Divide the forces, and man the ships," counselled Professor Jameson. "It is best that we be off at once. Let the two ships remain together. We must not take the chances of becoming separated."

The final preparations were made and the two airships arose into the blue sky. The machine man stood in command of one while Ravlt commanded the other. Together, the two ships cruised out over the planet of the blue dimension. They signalled back and forth in regard to their route of travel, outstanding features of topography, the lighter density of the atmosphere in comparison to the air of Trulfk, and other topics.

The terrain over which they flew at a high altitude underwent no appreciable changes as they progressed. There were the same forests, hills, dales and occasional waterways. No life was visible. Not once did they see either of the two types of animals they knew to exist upon this world. Of course, they were unable to perceive what the dark, thick forests cloaked.

The machine man, peering far ahead of their course with a telescope, caught sight of a queer arrangement of dark mounds a considerable distance to the right of the course they were pursuing. He quickly notified Ravlt, and both ships swung in that direction, picking up an increased speed.

As they approached nearer, dark specks were visible flying about over the dark domes which arose to quite a towering height.

"The Emkls!" announced Ravlt.

As they came closer, another discovery was made.

"There, Snrpy, are the kind of creatures into whose hands you fell," informed the machine man.

Snrpd was appalled. About the avenues laid between the black mounds walked the round, fuzzy animals on their stilts. Some of them ambled along awkwardly without the walking poles.

"An Emkl city!" cried Dlb. "See how they fly in and out of the dark houses!"

Professor Jameson saw that this was true as he noticed several of the Emkls emerge from apertures in the sides of the black mounds. At his side, Snrpd offered a plausible observation.

"The long-legs are allies of the Emkls—they live together."

Hell Breaks Loose

THE Emkls now perceived the two airships heading toward their city, and with excited cries and wails drew the attention of those below on the ground. From every one of the high mounds, and there were several

thousand of them, there poured forth a black, flapping horde of the repulsive Emkls rising upward with cries in which were blended curiosity, suspicion and animosity. Their concert of wails and continuous humming arose like a veritable bedlam about the ears of the invaders. Straight for the two oncoming airships they flew.

"Fire into them!" shouted Ravlt as the black cloud bore down upon the aircraft.

Explosion after explosion rocked the air as the two ships threw a steady barrage into the overwhelming ranks! A steady stream of Emkls arose from all sections of the city! For every one shot down, five were ready to assume its place! The rapid fire did not check their approach! On they came!

"Rise to a higher strata of the atmosphere!" ordered Professor Jameson, taking a quick grasp of the situation. "Quick! Before they are upon us!"

The operators of the two ships were quick to follow the suggestion. Up they shot, skyward! In that moment, the Emkls, like a destructive mantle, were all about the two airships so that the blue sunlight took on the semblance of twilight. The guns of both ships kept spitting continuously, their silent messengers of death lodging in some portion of an Emkl where their silence was soon broken by dull explosions. The torn and mutilated bodies of the creatures then hurtled to the ground. During the terrible massacre, the black domes of the city were literally bathed in the blood of their owners.

The Emkls, it was apparent, lacked not for courage. They rushed fearlessly to the center of the conflict in unbelievable, overwhelming numbers, their screaming, buzzing ranks soaring and flapping about the two ships of the Tripeds which were now being guided up and out of the living, flying, wailing horde.

Ravlt's craft was slightly above that of the machine man's. Both were rising through the almost solid mass of Emkls with the utmost difficulty. The wailing and humming of the loathsome, bird creatures became a screeching roar in the ears of the Tripeds. Well might they be glad of the mind protectors they wore.

Professor Jameson had now lost sight of Ravlt's ship, hidden as it was by the flitting forms of the Emkls. There rang in his ears a cry which at once increased his anxieties and fears.

"We are falling!" shouted one of the Tripeds.

"Put on more speed upward!" ordered the machine man.

"Impossible!"

"The ship is loaded down with Emkls!"

"Our upward speed is at its highest notch!"

"Blow them off!"

"Hurry—before we crash!"

The three-legged gunners fired into the clinging swarm of Emkls which hung tenaciously to the airship. The latter were bringing it down rapidly. Many of them were blown to bits, but always there were more to take the place of those killed.

With a terrific impact the airship struck. The mingled sound of rending bones and crushed flesh came to the ears of the Tripeds as those of the Emkls hanging to the bottom of the airship were smashed flat.

There were also casualties among the Tripeds. With the exceptions of a bent leg, Professor Jameson found himself intact. The Tripeds arose drunkenly, many of them having sustained several injuries. Two were dead. The rest took themselves alongside the machine man,

ready to repel the attacks of the fierce creatures into whose city they had fallen.

The Emkls labored desperately to enlarge a gaping hole in the side of the ship. With his disintegrating ray, Professor Jameson, machine man of Zor, burnt a hole through their ranks. With a cheer, the Tripeds saw the Emkls drop swiftly back. But the respite was only for a moment. They renewed their efforts to enter through the jagged hole which had resulted from the crash in spite of the terrible ray. Such an attempt represented rank suicide, for they were destroyed instantly.

A muffled explosion within the airship caused the professor to turn suddenly about. Snrpd had blown to bits an Emkl about to spring upon the machine man.

"They are coming in through the front of the ship!" howled Snrpd as another of the winged devils closed upon him.

It was the last word Snrpd ever uttered. His head was immediately snapped off by the Emkl which sprang upon him. More of the winged inhabitants of the blue dimension were pouring in behind their companion. Professor Jameson saw the swift assault which terminated Snrpd's career, but he dared not leave his post. The Emkls were crowding about outside the hole, waiting for a chance to enter, no matter how desperate the chance. They seemed to hold no fear of death.

Death's Feast

THE remaining Tripeds leaped forward to the attack, hurling back for a brief moment the Emkls who, with folded wings, strode down upon them menacingly. The airship was filled with a humming and wailing as the Tripeds and Emkls closed with one another in mortal combat, the Tripeds going down beneath the greater physical violence of the overpowering number of Emkls. They were surging into the ship from the forward deck so rapidly that the machine man recognized the futility of holding the other entrance longer against invasion.

Dropping the ray gun, he sprang among the fighting Emkls and Tripeds, working his way to a position where the winged attackers were the most numerous. Six metal tentacles whipped themselves about six Emkls, crushing them slowly in a terrible embrace.

Professor Jameson experienced a keen satisfaction in the act as there sprang to his mind the memory of 25X-987, 149Z-24, 69B-496, 8B-52 and many more of the machine men of Zor. They had all died at the hands of these damnable creatures who were now tasting the revenge of a Zorome.

The Tripeds, spattered with the blood of their fierce fighting adversaries, now panted in exhaustion as Professor Jameson squeezed the life from the six wretched Emkls he held within his powerful tentacles, strategically blocking the passage from any further inroad of the dread monsters. The latter howled their rage and beat frantically upon their dying comrades in an effort to shove past.

Only three of the Tripeds were left. The crashing of the airship and the subsequent battle had taken toll of the rest.

"We are lost!" shouted Dib. "See!" He pointed to the hole in the airship's side where the machine man had recently repulsed an attack from this quarter so effectively with the ray gun. Through the enlarged opening there came an Emkl, followed by another and an-

other. At their backs surged a countless throng of the fierce combatants.

"Fight to the death!" shouted Rmk, resolutely throwing himself into the attack. He blew up two of the hideous, winged monsters before his weapon was wrested from him and he was forced to close with the overwhelming horde.

The machine man released the six dead Emkls and came to grips with new arrivals, seeking new victims. Into the airship there rushed another stream of the insidious inhabitants of the blue dimensions. In reckless abandon they stumbled over the corpses of their fallen compatriots. Professor Jameson found plenty of work for his tentacles. The three Tripeds had gone down almost immediately following the last, defiant cry of Rmk. As he had urged them, so had they done. They had all died as brave Tripeds, fighting to the last.

Professor Jameson, seeing that his companions had all been killed, hunted for his ray gun. He could not find it. The weapon lay somewhere beneath the pack of dead Tripeds and Emkls. Knowing that little could be accomplished here, and that the airship had become a concentration point of attack, he immediately jumped through the torn side of the airship and into the vast assemblage of the Emkls waiting outside.

They were all around him. Leaping upon him, they bore him down ere he had taken more than five steps from the wrecked craft. He snapped shut his mechanical eye shutters as he felt strong jaws rasping effectively against his metal head. One of his metal tentacles was wrenched from his body. With the remaining five he threshed about him wildly, and many an Emkl was knocked over with a crushed skull or other mortal injury. The machine man was seized by many of them, and even his unparalleled strength was insufficient to prevail against their overwhelming numbers.

The airship had fallen in an open space among several of the black domes. In fact, it had grazed one of the buildings in its descent, leaving a great scar from summit to base. Far above him, Professor Jameson saw the ship of Ravlt's command as a tiny dot upon the sky. The Emkls had abandoned the attack upon it, and the ship now rode solitary and unhampered far above the city.

Through the wailing, surging, threatening mass of Emkls the professor was borne. He perceived many of the fuzzy creatures among the crowd, some of them on their stilts and others without them.

Ravlt's ship was now dropping small objects from its position above the Emkl city. They loomed larger as with a swift momentum they fell upon the towering, black domes, exploding and casting their contents in all directions. The city was being bombed. The explosives fell thick and fast, some in the streets between the domes while others exploded upon the tops of those structures which they chanced to hit. The Emkls appeared but little perturbed by this offense tactic. A few circled upward toward the airship of the Tripeds which was now on high and well out of the possibility of another mass attack. Those of the Emkls who were so fearless and reckless as to venture near were promptly blown out of the sky.

Victory

THE machine man was borne onward towards the center of the city. Suddenly he felt his captors'

steps falter as their wailings took on a different note. The Emkls passed through three stages of emotional attitude. They became curious—then frightened—finally frantic. Releasing the professor, they rushed about pell-mell as if seeking escape from some unseen demon. Professor Jameson was dropped abruptly to the street from which he picked himself up to gaze bewildered at this new turn of affairs. He sought the cause of it.

All over the city the Emkls had turned riotous, panic stricken and abandoned to chaos. The machine man wondered if the bombs had occasioned it. As a faint, smoky haze drifted before him upon the atmosphere, he became aware instantly of the reason for the Emkls' strange behavior. The bombs had released a poison gas! The Emkls were falling like stalks of corn before a gale! In thin wisps the almost invisible vapor curled upward to assail those of the insidious creatures upon the wing, choking them and causing them to reel downward to death.

In the streets the choking, destroying vapor hung like a pall, reaching into the black, high-domed domiciles of the Emkls, searching out each innermost corner for victims. Every living creature that breathed fell before the onrush of the deadly gas.

Professor Jameson, the machine man, strode through the city of death, unmolested by the terrible bird monsters into whose hands he had fallen. The streets were now packed with the corpses of his enemies. Among them were to be seen the dead bodies of the round, fuzzy animals as well. One of the latter Professor Jameson saw posed in a grotesque position of death. With great long stilts sprawled apart like props, he lay dead up against the side of a black dome. The machine man gave one of the stilts a kick, bringing down the lifeless body into the dust.

Above him the airship soared in the upper air lanes, keeping well above the heavy, poisonous gas. A few of the surviving Emkls who had been fortunate enough in flying above the gas were winging their way toward the horizon, having seen their comrades die by the thousands. The machine man realized that Ravlt would never dare bring the airship down and pick him up while the deadly vapor spread by the bombs lay like a shroud over the city. He also had no idea concerning the length of time it would take for the dissipation of the gas.

He decided to leave the city, seeking an open spot beyond where he might be picked up by the Tripeds. Through the city streets he made his way, stumbling over the scattered piles of dead Emkls, wishing he possessed his mechanical wings at that moment. He had not brought them with him. They were left behind in the orange and blue dimension, reposing in the wrecked space ship.

Passing the last cluster of dark mounds, he found himself upon the outskirts of the city. He now put a good distance between himself and the silent assemblage of black domes, noting with satisfaction that those in the airship had divined his intentions and were following him, the airship hovering lower. Finally, having cleared the vicinity of the life destroying gas, the Tripeds descended and picked him up.

"Are you all right?" inquired Ravlt.

"One tentacle missing is all," replied the machine man. "The rest of my ship's company were wiped out."

"So we saw before we let fly with the gas bombs," said Ravlt. "You're lucky to be a machine man. Other-

wise the Emkls would have done for you just as easily."

"The bombs did their work well," commended the professor. "The entire city's population is wiped out. The streets are literally choked with the dead."

"We should have resorted to the gas bombs in the first place," spoke Ravlt in self-reproach. "Then we should not have lost half of our forces."

"The price of over confidence and curiosity," stated the machine man. "It is a lesson we shall not forget."

"What terrible fighters they were!" exclaimed Kvsb as the ship gained altitude. "How cheaply they held life, and how ferociously they attacked."

"Nevertheless, they learned to keep away from our ship after a while."

"What shall we do now?" asked Professor Jameson.

"I believe the best thing to do is return to our own dimensions and come back reinforced to attack the other Emkl strongholds we may find," advised Ravlt.

And so they headed back across the world of the blue dimension toward the spot where they had entered it. The sun was now at its zenith. They cruised low in order to scan the topography. Once on the far horizon they perceived the black domes of an Emkl city.

"We'll attend to that at a later date," said Ravlt.

CHAPTER V

Ghosts of the Past

THEY were returning to their starting point by a different route than the one they had taken on coming to the city of the Emkls, and now they gazed upon physiographical peculiarities which they had not seen before. The land took a sudden, deep drop into a broad basin whose other rim lay beyond the horizon.

"A dry sea bottom," observed Frst.

"Drop lower," directed Ravlt to the pilot. "Our route extends across the edge of this depression."

"It looks lonesome," commented Professor Jameson, his eyes scanning the great valley whose other rim lay out of sight.

"Perhaps it is a gouge taken out of the planet by collision with another cosmic body," ventured Ravlt.

"Far ahead of them, a little to the right of their course, there lay another deep drop within the vast valley of mystery."

"Guide the ship in that direction, and we'll fly over it," ordered Ravlt.

"How deep it is!" exclaimed Frst.

"And wide!" added another.

"As if a great chunk had been cut from the bottom of the basin," said Ravlt to the professor.

The latter was gazing down into the huge pit with one of the airship's telescopes. Some of the Tripeds were doing likewise.

"The sunlight is fading," spoke Stn suddenly.

"What? At its zenith?"

"You must be imagining it."

"Yes! It is!" affirmed Ravlt, confirming Stn's discovery. "The blue is changing color near the center of the sun!"

"An eclipse!" shouted Stn in realization of the actual truth. "It is an eclipse upon the other world! The orange sun is crossing before the blue one!"

Professor Jameson had paid but little attention to the excited discourse of the Tripeds. Something had

gripped his attention within the depths of the pit. He gazed fascinated at something upon its bottom.

The mental faculties of the Tripeds were diverted from their contemplation of the vague change the blue sun was undergoing as the machine man cast an excited thought transference into the group.

"Look!" he directed them. "Down in the pit—on the bottom!"

The professor's excitement grew. The Tripeds had never seen him evidence excitement before. Those at the telescopes followed his pointing tentacles with their instruments.

"There's something down in there moving around!" exclaimed Plmk. "You can hardly see it—so ghostly looking—I would say, transparent!"

"Fly the airship down into the pit!" directed the machine man, an eye still glued to the telescope.

The ship of the Tripeds slowly sank into the depths of the great depression, Ravlt a bit wary for some sort of an attack by strange, unknown monsters of the blue dimension. As they drifted toward the floor of the pit, those of the Tripeds who were not equipped with telescopes were enabled to discern moving objects of vague, dim shape, barely perceptible.

Ravlt muffled a cry of surprise. He caught sight of a shadowy, fleeting form, recognizing it for what it really was. He stared in sheer astonishment. The Triped's speech faltered, then he stammered in unbounded amazement.

"Why, it is—a—a machine man—like yourself!"

He pointed a shaking arm at the professor who was silently gazing at the ghostly forms flitting about on the floor of the deep pit.

The machine man's thoughts were not for the three-legged creatures which surrounded him. The amazing discovery had for the moment rendered him entirely oblivious to their presence. His thoughts flew in rapid communication with the dim, elusive figures grouped about the pit's bottom, waiting for the airship to come to rest.

As the ship bumped gently to the floor of the chasm, it was apparent that the shadowy figures were machine men like the professor himself. The blue sunlight had been supplanted by a yellow haze which appeared to envelop the pit. Weird, gliding forms unlike those of the machine men floated below, above and on all sides of the airship, entering in and out through the solid sides of the craft at ease.

The Tripeds talked in awed tones among themselves. It was evident that the professor was holding communication with these strange, phantom, machine men so much like him, yet so transparent and unreal.

"You can see through them!" spoke Ravlt. "They are not tangible! See how they walk right through the sides of the ship!"

"They are not of this dimension!" opined Plmk.

"You mean that they are in the other world?" queried Ravlt. "The world where our companions await us?"

"Exactly!"

"But how are they visible to us?"

"The eclipse—you forgot that!" reminded Frst.

"Indeed, that explains it!"

As if in afterthought, Ravlt added: "Why didn't we find them on the planet? They cannot be there. Professor Jameson would have seen them with his telescopes long before this—before we found his wrecked space ship!"

The Tripeds shook their heads in perplexity and awaited an explanation from the professor. They were not capable of attuning their thoughts to the telepathic conversation between Professor Jameson and the semi-visible machine men of Zor.

The professor, at sight of his long lost companions in the garb of phantom beings of another world, had been laid by the heels, figuratively speaking, by the sudden, unexpected discovery. In turn, on seeing 21MM392, the Zoromes were no less astonished than the professor himself.

An Amazing Revelation

PROFESSOR Jameson saw before him 41C-98, 744U-21, 6W-438, 29G-75, 56F-450 and many others among the ghosts of the pit.

"Where—where are you?" he asked. "How did you get there?"

"21MM392!"

"Yes! Where are you?"

"At the bottom of the ocean! And you—are you really in the world of the phantom birds?"

"Yes!" The professor's surprise was beyond description. "Why don't you emerge from the ocean?"

6W-438, principal spokesman of the group, pointed in mute reply to the question. His waving tentacle took in the lofty, towering walls about his companions and himself.

"We are prisoners of the sea!" supplemented 56F-450.

"We number a full fifteen in this pit of the ocean," explained 6W-438. "If you remember, we were part of the crew detailed by 25X-987 to stay with the space ship. Compelled by the hypnotic suggestion of those damnable, bird phantoms, we were driven to what they believed would be our deaths. When we emerged from our trance we found ourselves here. That was quite a long time ago."

"Over seven hundred revolutions of this planet about the double suns," interjected the professor.

"How did you get where you are?" was the inquiry.

"It is a long story," replied Professor Jameson. "I'll get you out of the sea first; then I'll tell you."

Quickly the professor turned to his three-legged allies and briefly explained the situation to them. While he did so, one of the Tripeds gave a sudden exclamation of surprise.

"They're gone!" he shouted.

It was true. The machine men had disappeared. So had the yellow haze with its ghostly marine life. The eclipse had passed.

On the planet of the double sun, in the blue and orange dimension, the Tripeds waited anxiously for the return of their companions, who with the machine man, had ventured into the dimension of the Emkls. At regular intervals they set the transition cube's mechanism working. Since Dlb and Ldgz had returned and gone once more with the airships, relating the story of their initial skirmishes with the stilt walkers and the Emkls, there had been no communication or manifestation from the expedition. The Tripeds were becoming a bit impatient, and had nearly decided on sending a new force into the blue dimension to ascertain the reason for the protracted absence of those under Ravlt and Professor Jameson.

Brlx interrupted the plans by calling their attention skyward. "The suns are nearing one another! There will be an eclipse!"

"Don your hypnotic nullifiers!" ordered Glrg. "We'll now be able to see into this other world!"

Above them, the Emkls materialized out of mere nothingness, and with dismal wails and incessant humming flew about over their heads. The Tripeds looked in vain for their friends but could see no trace of them. The eclipse lasted but a short time, and the ghostly shapes of the Emkls became faint, then disappeared. Their dismal wails also became stilled.

Brlx announced that it was time for the transparent cube to be filled with its green glow of light, giving their friends in the blue dimension an opportunity to return to their own world.

Back to Trulfk

EARLY they watched the cube of green light, seeking the forms of their comrades or the machine man. The emerald luminescence paled a bit. Strange forms commenced to materialize within the cube.

"They're coming back!" cried Glrg excitedly.

The yells of triumph turned to shouts of surprise and dismay as the forms within the green cube took on definite, distinguishable shape. No three-legged Tripeds or metal machine man occupied the cube's interior. It was literally packed with kicking, struggling Emkls!

"Let them out!" shouted Glrg. "Stand ready to kill them as fast as they emerge!"

"Leave them in!" implored Brlx. "They'll strangle to death for want of air!"

Glrg pondered the question which was solved by the outcries of the other Tripeds, all of them brandishing their weapons and demanding the blood of the Emkls.

"Let them out! Let them out!"

"Open up!" ordered Glrg. "Let them out! Stand by to destroy each and every one!"

The cube's entrances were both opened at once, the air rushing in with a loud report, throwing the leathern winged Emkls into a conglomerate heap, dazed and bewildered. The Tripeds lined up outside. As the Emkls either flew or walked out one by one, the careful aim of the Tripeds blew them to pieces. The Tripeds were enjoying the sport immensely, especially after their long wait and restricted activity. As the last of the Emkls flew out of the cube and disappeared in several loud reports, there arose a cry for more of the hereditary enemies of the Tripeds.

"Bring more of them from the other dimension!"

The cube was immediately emptied of the air which had been admitted, and once more the discs at one end filled the huge compartment with the green glow which so effectively hid everything it encompassed.

Impatiently the Tripeds waited for more victims, their appetite for massacre whetted by this initial onslaught. The green glow was allowed to suffuse the cubic chamber for the allotted time before Brlx ordered it to be dispersed. Gradually the green mists cleared to reveal a huge, bulky object which filled nearly half of the transition cube. It was one of the two airships which Dlb and Ldgz had taken with them into the blue dimension.

"The ship!" exclaimed Brlx.

"They're returning!"

"But where is the other ship?"

"Perhaps it is waiting to come through afterward," suggested Glrg hopefully, attempting to dispel the anxiety he felt. "They might not have had sufficient time to maneuver both into place."

One entire side of the transition cube was lowered to allow the egress of the craft. Professor Jameson was the first one to emerge from the airship as it swung out of the cube.

"Where is the other ship?" inquired Glrg.

"Destroyed by the Emkls along with half of our forces," he reported.

Then tersely he related their adventures in the blue dimension with a full account of their discovery of his companions, the machine men, imprisoned in the depths of an unscalable pit at the bottom of the ocean.

"When we came back here to the transition cube, we found the Emkls flying in and out of its green haze. The—"

"Yes!" interrupted Glrg. "Some of them came through into this world! We killed them all!"

"The Emkls were so thick that we had to fight our way through them to place the airship within the green light," concluded the machine man.

"These Zoromes—the survivors—your friends!" spoke Glrg in his excitement. "Where do you say they are?"

"At the bottom of the ocean!" stated the professor. "I know the exact spot! We must bring them out!"

"By all means!" said Brlx. "Let's be off and at it immediately!"

The Tripeds' eagerness to bring forth the long lost machine men from the depths of their watery prison was surpassed only by the professor's zeal.

"We had best make the journey in one of the space ships," advised Glrg. "It will float on the water, and we can lower lines to your friends."

"I'm going to descend into the sea on one of the lines," announced Professor Jameson.

They were soon floating in the space ship of the Tripeds above the spot where the professor knew his fellow machine men to be.

"Only a machine man could do that," mused Ravlt in a remark to Glrg as the metal head of Professor Jameson disappeared beneath the surface in a swirl of bubbles.

"He was invincible in the combat with the Emkls," stated another of the Tripeds. "They overpowered him by superior numbers after he had killed many of them."

The Ocean's Secret

DOWN, ever down, sank the machine man through the yellow, misty waters whose color deepened the lower he went. All the time, the Tripeds above unreeled the line which was sending him to the floor of the watery pit. A yellow phosphorescence replaced the filtered daylight as the machine man plumb the lower depths of the sea. Soon, he saw the high wall of the pit slide upward and away.

He felt his metal legs bump against the ocean floor, and he gave several yanks on the line to announce his arrival to those above. Instantly he radiated a mental call to the machine men of Zor. He peered through the murky yellowness for a sight of his comrades whom he had supposed dead. Had his metal anatomy been possessed of a heart, it is needless to say that it would have beaten excitedly.

Through the suffused twilight of the yellow gloom there walked slowly toward him four metal forms, seaweed clinging to the waving tentacles. Approaching him were 41C-98, 744U-21, 6W-438 and 29G-75. It was

truly amazing! Here in this living grave of the sea's yellow depth these machine men had survived for more than seven hundred years!

"Where are the others?" asked Professor Jameson. "You said there were fifteen survivors."

"Come," stated 6W-438. "We shall go to our underground rendezvous. You will meet the rest—what there is left of them."

Together the five machine men made their way to a cave dug in the side of the pit's wall. At its entrance stood two more of the long lost Zoromes. Professor Jameson noticed in surprise that one of them was possessed of but two tentacles, while his companion limped about on three legs and possessed four tentacles. A greater surprise was in store for the professor as he entered the cavern.

On one side were ranged nine metal heads in a row. The metal eye shutters opened at his approach. Across from the heads, on the other side of the cave, was a conglomeration of worn out metal bodies, legs and tentacles.

"You see," explained 6W-438, "during the time we've been down in this hole, many of our parts have worn out. They wear out many times faster in the water than any place else. Among the fifteen of us we have enough parts left to fully equip four with enough left over to partially outfit two others. We take turns in wearing the tentacles and legs which, of course, have worn out quickest."

"Are there any more of the machine men left beside us?" asked 41C-98.

"Not that I know of," replied the professor. "Until I found you, I had thought myself the only survivor. How was it that the Emkls did not drive you to death down here?"

"Their hypnotic powers are of no avail to any living creature in the water. That is why the water animals who came out on the islets to wail at the blue sun were rendered immune to the phantoms you call Emkls. Sometimes during an eclipse we see the Emkls flying down here, even as we saw you."

"What about yourself?" queried 20R-654, one of the nine heads ranged in a row upon the cavern floor. "How did you escape the lure of the phantoms?"

"Who were the three-legged animals we saw you with, 21MM392?"

"How did you gain access to the other dimension?"

The questions flew thick and fast.

"Wait!" begged the professor. "When we are all safely out of here you shall be given a complete, detailed account of everything. It is a long story. The Tripeds are waiting to haul us out of here."

Picking up the nine metal heads, the seven Zoromes made their way to the spot where the professor had descended.

"Within our space ship there are plenty of tentacles, heads and legs for you," Professor Jameson promised the nine heads.

When they reached the place where Professor Jameson had left the hanging line they found more lines, some of them terminating in large baskets. They could all make the ascent in one trip.

The professor gave the signal to pull up, and this was followed by the rise to the surface. The rescued machine men gave a last, farewell wave of tentacles to the various forms of marine life which curiously regarded their departure.

(Continued on page 151)

The Perfect Planet

By Miles J. Breuer, M. D.

Author of "The Captured Cross-Section," "On the Martian Liner," etc.

WHAT is it that enables us to think clearly, or prevents us from seeing the obvious solutions to even ordinary, everyday problems? Isn't there some medicine or help for the muddle-headed individual, who means so well? Dr. Breuer thinks there is—and perhaps he is actually working on something himself, even if he does locate this "miracle-working something" on another planet.

Illustrated by MOREY

GUESS I'll look for the meteor," said Gus Kersenbrock out loud.

There was no one in those vast solitudes of sand-hill and sage-brush to hear his voice, but the arrival of that inspiring idea seemed to cheer him up. He lifted his head, and his drooping body became alert with interest.

He had been mooning along gloomily over the sand-hills for the greater part of the Sunday afternoon; for the sand-hills were his refuge when he was troubled and depressed, which the Lord only knows was often enough. Here among these wastes of sand, majestic as a frozen sea, he could think. That is what he had been trying to do now—in his halting and difficult fashion.

"Just because my head works too slow," he talked aloud, kicking at a tuft of gray sage, "that snob of a Thompson is taking my girl to the circus and I'm snoopin' around here like a coyote. Now, after it's too late, I can see what I'd ought to have said and done; nowadays you can't boss girls around by yellin' at 'em. I can't blame Kitty for going with a fellow that's got good manners and dresses swell and tries to please her all the time."

His feet crunched along through the sand. The low sun, shining orange-yellow through the dust pall, cast shadows of the low, rounded hills toward him.

"It don't seem right. Hard as I work, I can't more'n earn a bare living for myself, and have nothing left to offer to Kitty. A girl don't want a pauper. Thompson leads an easy life and has lots of money. Supposen' everybody knows he's a bootlegger; as long as he never gets caught he is more welcome at dances and parties than I am. And he comes by the garage in his swell clothes and sneers down at me when I'm under a car in

my grimy overalls—I could throw a grease-rag in his pink face!"

About that time he conceived the idea of looking for the meteor. He stood on top of a rounded knoll of smooth, shining sand, somewhat higher than the others. He peered in all directions for signs of the meteor. But he saw nothing, except far in the distance behind him a tiny black dot where his Ford coupé stood. He had driven it as far as he could, until the road disappeared and the sand became too deep for driving. Everywhere else were unbroken, billowed wastes of sand.

"I suppose," he grumbled on, "after Forbes fires me for fumbling that transmission job and I'm sunk with nothing to live on, then I'll figure out how I could have fixed it."

At seven o'clock the previous evening he had flung down his tools and left the shop in utter discouragement. He had been trying to repair the reverse gear of an old Model T Ford that would not work. All that afternoon he had toiled in the black grease, with gear-wheels and wrenches all about him.

"Who the hell can understand *that*?" he had exclaimed, and decided to spend his Sunday afternoon in solitude among the sand-hills, with his .22 rifle, some sandwiches, and a canteen of water.

The idea of searching for the meteor had struck him when the afternoon was all but over; but it lifted him somewhat out of his depression. Two weeks before, about four o'clock in the afternoon, all of the little town of Chadron had been startled by a flash of green light that was bright even in the afternoon sunshine, and by a dull, thunderous reverberation. It seemed to be almost on top of them, at the very edge of town at least. But every inhabitant of the village had joined in a minute search of



He whirled about to look out of the door, and found to his amazement that his movement carried him a half dozen feet across the room.

the ground for miles around, and not a trace of the fallen star had been found; finally it had drifted out of their memories. Of all of them, Gus alone recollects it, when on this Sunday afternoon he found himself headed right in the direction of the place where it had been seen to fall.

Gradually his despair mellowed into a sort of peaceful melancholy; his dumb anger against Thompson subsided, and in its place came a stirring sort of glow of kinship with this spreading grandeur about him. Gus Kersenbrock was not outstanding for mental brilliance, but he did have a poetic sort of soul; he loved the wastes of sand and the riots of sunset color. Even the thin, gray coyote outlined for a second on the crest of a distant hill, seemed like a brother and a companion in the wilderness.

Then he saw the Ball!

He had just trudged up to the brow of a rounded hill, and saw it down in the valley ahead. It was huge, round, and greenish. It lay partly buried at the end of a vast furrow in the sand, that looked as though a Brobdignagian had dragged his gigantic boot there. The Ball did not look like anything he had ever heard of, seen, or imagined.

Afterwards he had always called it "The Ball," because of his first impression of it from a distance, sunk in the sand, with heaps of sand thrown up about one side of it. But as he came close, he made out that it was shaped like an olive, rather longer in proportion to its transverse diameter, and somewhat lighter in color; but taken altogether, looking very much like a huge olive. Arriving all out of breath under the bulging lee of the thing, he touched it with his hand. It was smooth and felt like glass; and he thought he could see a little distance into its translucent substance. He walked around it, and suddenly perceived that it had a door, swinging open.

For the first time it struck Gus that the ovoid was not some inorganic product of natural forces. To come to think of it, it could not possibly be a fallen meteor; those usually splash an immense hole in the ground, throwing up a circular mound of earth in crater form. This thing, if it came from above, must have landed with reasonable care and gentleness. Tales of Zeppelins bootlegging liquor from Canada to St. Louis entered his mind. He wondered if it would be best for him to wait for darkness and quietly steal away.

The door was heavy and countersunk, like a safe door. There were three other circular openings in different parts of the ball, covered with glass or some transparent stuff. For half an hour he lay there watching and listening intently; but not a sound, not a movement, not a glimmer came from within. That gave him courage to approach it again.

Then he got an idea, simple and cunning rather than brilliant. He tossed a pebble into the open door and scuttled into hiding. He heard it clink on a metal floor, but not a sound answered it. After waiting another fifteen minutes he was reasonably sure that there was no one about the apparatus. He walked up to the open door and thrust his head inside.

The light streamed in through the open door and through the three circular windows. Vague shapes of machinery stood about. The interior was a single compartment corresponding in general shape to that of the exterior of the huge ovoid. He waited until his eyes be-

came accustomed to the subdued light within. Nowhere was there a sign of a living thing. He climbed inside.

He found himself in front of a table on which there were knobs and handles and dials and scales. He concluded that it was some sort of a control board. He stood in front of it with his hands clasped behind him, refraining carefully from touching it, because his primitive caution warned him to let it alone. Then he sauntered about inside the place trying to understand what it was all about. From the shape and size of the interior he could see that this room occupied all of the space within the vessel. Yet, there were no cases of liquor to be seen. In fact there was nothing of a familiar nature. He could not say what it was that he expected to find, but we can guess: papers, books, canned food, furniture, a hat or a coat. There was nothing that he could recognize, and a vast amount that he could not; a vast amount that seemed utterly strange and bizarre to him.

THE machinery seemed more familiar to him than the other objects. He was a mechanic, and in a simple fashion a very good one. Though their forms seemed utterly strange, he could guess the uses and purposes of some of the mechanisms. At one end were coils and vacuum-tubes that must have belonged to the high-frequency electrical field. Nearly opposite the door were many metal cylinders in rows, with valves at the tops, which reminded him forcibly of the drums in which they received their supplies of acetylene and oxygen for welding in the garage where he worked. He recognized a small electric dynamo-generator and the light-bulbs and heating devices which it operated, though the things were of the most odd and unearthly shapes.

He was conscious of a curious sensation from the moment he had stepped into the interior, and in the back of his mind he was trying to define it; a sort of feeling of ease and power and lightness. A mournful howl suddenly splitting the air outdoors startled him for an instant; he whirled about to look out of the door, and found to his amazement that his movement carried him a half dozen feet vertically up into the air and a dozen feet across the room. Then he floated down gently to the floor. Two things were going on in his mind at the same time: he decided that the noise outside was a coyote and not the owner of the vessel, and he was forced to conclude, strange as it might seem, that the force of gravity was decreased within the vessel. It was many days before the corollary of the latter conclusion dawned upon him: that he was inside an interplanetary flier, and that gravitation was decreased to suit the convenience of beings from a planet smaller than ours. At the moment he still struggled with the idea that it was some sort of an illegitimate conveyance for smuggling or bootlegging.

He was roused from his puzzled thoughts by a sizzling sound and a queer odor. He found that he had descended gently on the tops of the metal flasks with stop-cocks, and that to regain his balance he had seized one of the valve-levers. He must have released some of the gas in the containers, for it was sizzling out and filling the room with an utterly strange odor, very penetrating and somewhat aromatic. It reminded him distantly of crab-apple blossoms. Instinctively he grasped the lever again, and trying it this way and that, eventually, after several anxious minutes, stopped the sizzling.

He went to the door, trying to ascertain if he had any

ill effects from having inhaled the gas. He could feel no change; everything seemed as usual. What such large quantities of stored gas could possibly be for, he could not imagine. Frightened into better caution by his first slip, he examined the place thoroughly, until forced to desist by the gathering twilight. He started homeward, as much puzzled as ever; marking in his mind carefully the location of the Ball, with the intention of visiting it again. He went home in a considerably improved mood. He had had an adventure, and adventures were scarce for auto-mechanics in the sandhill country.

Monday morning, as he started for his job at the garage, he was still worried about the Ford reverse gear, and the fear of tackling it again made his steps lag.

"Being scared is just a *feeling*," he said to himself. "My feelings aren't going to run me as long as I've still got a perfectly good noodle. So here goes!"

He was amazed because he was thus able to see it as he had never seen it before; and he was amazed to find that the mechanism of the Ford transmission when he tackled it, was perfectly clear to him. Without any trouble, he could picture the large internal gear with the small one revolving backwards within it. It was more like a pleasant game than a difficult job to take the mechanism and systematically put it through its movements one by one, testing each function until he came to the lost set-screw on the inner shaft. He felt exhilarated after he had got the thing together working perfectly, and looked around for another job.

Gus was again amazed at himself when that forenoon his employer, Forbes, started a foolish wrangle with a customer, a tourist in a Cadillac. Gus had always been rather afraid of Forbes, and had a vast respect for the latter's ability to sign checks to the Skelly Oil Co., for two hundred and forty dollars every month. But it certainly showed lack of judgment on Forbes' part to argue with the man with an Ohio license-plate about the virtues of the sandhill country. If the Ohio man insisted that this was a God-forsaken place and a hell of a hole, Abe Forbes should have nodded, thanked him for his purchase, and asked him pleasantly to come again. How plain it looked now! Yet Gus had never noticed it before, even though it was happening constantly. So he hurried up, filled the tourist's radiator with water, polished his windshield, and told him how to find the better of the two roads to Alliance.

"Thank you! Come again!" shouted Gus pleasantly as the tourist drove off grumbling. Like a light breaking across a foggy sky, it dawned on Gus that Abe Forbes was driving half the good business to Alliance by his habits of arguing with customers about non-essential trifles.

Early in the afternoon it became vividly apparent to Gus that the front of the garage was disorderly and dirty. "Good business won't come to a junk pile," he thought, and set about putting things into attractive shape. By evening he had in mind a half dozen things about the business that were being done wrong, in a muddled, stupid fashion, and was planning remedies. He was amazed that such obvious things had been allowed to go so long without being recognized. "We've been blind. Blind as bats!" he thought. He was full of the exhilaration of plans for revolutionizing the business of the garage. Then came evening and with it, thoughts of Kitty. He called her on the telephone.

"How are you, Kitty?" he asked in a jolly tone, that

surprised her so that she nearly dropped the receiver. "I'm mighty anxious to get a look at you. Can you do my eyes a favor tonight?"

"Why—oh—why—oh, yes!"

Kitty was embarrassed because she had already promised Thompson a date. But she was so astonished at the expression in Gus' voice that she wanted to see what had happened to the boy.

The only thing that had happened to Gus was that now he could *see*. He could understand how Kitty felt about things. He couldn't blame her for getting impatient with an unkempt, blundering mechanic. So, he telephoned to Chadron's little florist shop, and then got to work to clean himself up and set out his neatest clothes, in the meanwhile keeping his mind busy thinking up pretty speeches for Kitty.

"Oh, Gus!" she exclaimed when she saw him and the extended bunch of flowers.

She could not think of another word to say, but right there, Thompson fell a thousand miles.

For about three days after that, Gus was so enthused over the hundred and one things to do, that stood out so simply and plainly all about him, making the world such an easy and straightforward place to work with, that he forgot all about the Ball. During those days, Kitty saw only him, and courteously asked to be excused when Thompson called. The garage was transformed, and customers were surprised.

Several times Thompson sauntered into the garage, nattily dressed, smoking a cigarette with a jaunty air, but covertly studying Gus, keeping an eye on him, trying to discover what had happened and how. Gus greeted him cheerfully and went on with his own affairs.

Then, somehow, things began to slip. He didn't know how nor why. He couldn't find the trouble in the gasoline pump, and paid no attention when Forbes answered crossly to an impatient driver who was waiting for his tank to be filled. Within two days he had cross words with Kitty over the silent look of disappointed reproach she had given him for thoughtlessly teasing her and hurting her feelings, as had been his clumsy wont in the past. He spent all day Saturday on the carburetor of a Packard car and then got it back together wrong; it backfired and started a blaze under the hood of the car, and Forbes took twenty-five dollars' worth of damages out of Gus' pay check. Sunday he committed a blunder in a baseball game because he consistently underestimated the speed of the Alliance players; his team blamed him roundly for the loss of the game, and he resigned his place on it. To cap it all, there was Thompson taking Kitty home from the game, with a leer of satisfaction on his face at Gus' downfall.

"All because I'm naturally dumb," Gus muttered to himself. "I don't get things figured out plain, somehow. I can't *see* 'em. Only after they've gone wrong, I can see how I'd ought to done it. Well, guess I'd better go out in the sandhills and bum around with the coyotes a while. That seems to be where I belong."

He was startled to find himself right beside the olive-green Ball. Down below the surface of everyday, conscious thoughts, one's mind does queer things; and undoubtedly Gus' mind had in some way unconsciously associated his discovery of the Ball with the few days of clear vision which had so simplified the world's puzzles for him, and brought a taste of success. Up on the surface of his consciousness it had certainly never occurred

to him that way. While he was busy brooding about his discomfiture in baseball, Thompson's machinations against him, and the threatened loss of his job at the garage, his unconscious mind had guided him back to the Ball, in the vague hope that somehow the Ball might again grant him another respite of grace. All the while he was thinking of other things and believed he was wandering aimlessly.

He approached the Ball a second time from a slightly different direction. That accounted for his finding the skeletons and the instruments. There were three of the skeletons huddled together in a hollow between two low sand mounds, already stripped of whatever flesh they might have had, by birds and beasts. They did not look human. The skulls were long and bulging and the limbs amazingly long and spindly; the creatures must have stood seven or eight feet high. There were no ribs nor vertebrae, but instead of them, plates of a horny, chitinous substance. A number of strange utensils of some sort were scattered about them, rods, tripods, metal cases.

GUS felt very reverent and melancholy about the little heap of relics, and gazed at it in silence for some minutes, not completely understanding its significance at the time.

He spent two hours inside the big spheroid. He looked it all over again carefully, but had sense enough not to bother the controls nor to touch anything about the mechanism. He found an object that must have been meant for a chair; a cushion-like thing shaped like a tomato. As he climbed up on it, it sank down deeply and comfortably with him. There he sat in silence and puzzled, trying in vain to catch the fleeting idea of how the Ball had helped him.

He was disappointed. Beyond the exhilarating lightness due to the diminution of gravity within the machine, he observed no effects of any kind, though he watched eagerly for them for several days. As a matter of fact, the dragging, leaden feeling in his legs that surprised him when he jumped lightly out of the door of the Ball, remained on his mind for some days as an ironic reminder of his failure.

Back to the dreary days of monotonous and ineffective toil. Back to the bitterness of seeing Kitty driven around in Thompson's luxurious car and the taunting leer on Thompson's face. Even the forgetfulness of troubles which baseball practice had once afforded, was now denied to him. The grease and grime and disorder, the disheartening mechanical problems, the clumsiness of both himself and Forbes, seemed all the harder to bear because of the memory of a few days of clear vision and efficient action. Desperately his mind sought some way of getting back to that.

One day he suddenly paid another visit to the Ball. The evening before he had come upon an item in the *Nebraska State Journal*. It looked rather insignificant, sandwiched in between sensational paragraphs on politics and crime; but it stuck in his mind and haunted him all day.

It had been a particularly terrible day. He was groaning over the stripped gears of a Pontiac car, whose occupants stood about and criticized him; and Forbes fumed, but knew even less about the mechanism than Gus did. Gus went to bed exhausted that night, but still vaguely disturbed that there was something he ought to do about

what he had read in the newspaper. During the night his subconscious mind must have worked it out, for he leaped out of bed early in the morning and dashed across the room for the paper to take another look at the item:

SCIENTIST RESTORES FEEBLE BRAINS *Wisconsin Professor Discovers Drug to Clear up Muddled Thinking*

Drs. Loevenhart, Lorens, and Waters report that by means of their experiments with mixtures of sodium cyanide, carbon dioxide, and oxygen on insane and feeble-minded patients they have succeeded in quickening sluggish mental powers. After inhaling this gas their subjects talked much more rationally, reasoned better, and gave evidence of much more agile mentality. As soon as the effects of the gas passed off, they relapsed into their former stuporous or comatose states. Full scientific details of the matter are given in *The Journal of the American Medical Association* for March 16, 1929, Volume 92, No. 11, page 880. The results presented in this preliminary report are slight in degree, but are remarkable in their promise of sensational developments in a totally new field.

Gus was galvanized into activity. He dressed with race-horse speed, and hurried through the still sleeping streets to the lunch-counter on a run. The sleepy waiter came wide-awake when he saw Gus' energy, and served his fastest breakfast. In a few minutes Gus' Ford was rattling full speed ahead into the sandhills.

He arrived at the Ball's swinging green door breathless; he climbed in like a man who knew what he wanted and was going after it. In a thoroughly brisk and businesslike way he walked over to the cylinders in which the gas was stored and threw the valve of one of them wide open. His lungs, panting from his progress through the deep sand, took in the pungent fluid in deep breaths. For many minutes he stood there in front of the cylinder, inhaling the crab-apple-odored gas as deeply as possible. Then, like a flash it occurred to him that he was wasting it, and he turned it off with future needs in mind.

He rather expected to feel some physical sensation from its effects, but there was none. However, it had worked. He knew it had worked because of the promptness with which the idea of economizing the gas had come to him. In his ordinary state he could never have thought as fast as that, nor seen the point so clearly. Furthermore, the fact that he was able to deduce from his own prompt recognition of the need of saving the gas, that the gas had taken effect, was a bit of reasoning that encouraged him very much. He hurried back to town.

"What the hell do you mean?" roared Forbes, as Gus drove into the garage at ten o'clock. "This ain't an afternoon tea. You're fi—"

Gus smiled at him with calm and cheerful assurance.

"We'll be way ahead by noon," he said confidently. "I can fix that Pontiac in half an hour and then I can find the trouble in your check-book."

He went to work, leaving Forbes standing there and staring. By noon the Pontiac was fixed and the tourists had been sent off satisfied. The check book balance was straightened out. And Gus had Forbes convinced that the space about the filling pumps in front of the garage ought to be paved with cement. Forbes was astonished into speechlessness.

By evening things were running beautifully at the garage; it was as well organized and things worked as smoothly as they do in the big institutions in the cities; tourists went away declaring that they were sending all their friends in this direction—merely because Gus was able to see their viewpoint instead of his own, and was able to browbeat Forbes into seeing it because he understood Forbes' viewpoint. At the end of three days, Forbes had voluntarily given him a substantial raise in pay, and was still ahead because of the rise in receipts.

Again, Kitty was reconquered. It seemed easy to Gus; all he had to do was to put himself in Kitty's place, and treat her as he would like to be treated himself. Kitty was not only all his, but the happiest and most radiant young woman in town. She was overjoyed in Gus because she had always loved the solid and sterling qualities beneath his rough exterior. This new Gus was as strong and dependable as the old, but also courteous to her and thoughtful of her every wish. He was a wonderful man and all hers; and she glowed with pride as she walked down the street with him. The matter of the baseball team was not so easily handled; but Gus, being able to see things in their proper relationship, felt that it was a minor matter, and let it drop for the present as unimportant.

Thompson was disturbed. He walked past the garage many times a day, with black looks in Gus' direction; and Gus could see Thompson studying him in a puzzled fashion. At times he found Thompson following him about at night.

"Think you're smart!" Thompson once said sarcastically. "Well, never mind. I'll get you yet. I've got the means to do it with. You won't last long."

Knowing that Thompson was utterly unscrupulous, Gus was momentarily alarmed.

Gus found that he had to make another trip to the Ball on about the fifth day. It was a brilliant moonlight night this time, and he drove in the evening, taking Kitty along. The trip to the Ball was chiefly silent, because Gus was already losing some of the clear and full comprehension and sympathy that was his when he was under the influence of the gas. For the same reason he had failed to notice that Thompson had been watching closely and in secret all day, and was now following in his silent, powerful car, without headlights.

With wildly beating heart he turned on the valve and breathed the pungent gas for ten minutes.

His talk on the way home with Kitty was an inspiring one. By this time it was clear to him that the Ball was an interplanetary flier, whose occupants had perished in their first attempt to get about on Earth; and that the "gas" in the metal cylinders was merely some of the air of the planet from which they had come, stored under pressure for their long journey; and that its purpose was merely to supply the breathing-needs of the passengers of the space-vessel.

"Think of the millions of inhabitants of that lucky planet," he said to Kitty, "who have the benefit of breathing an atmosphere that has the power of clearing your understanding and lining up your thoughts, as it has done for me!"

"What a world! A world free from blunders and misunderstanding! A world in which there is only sympathy and no thoughtlessness. Suppose that all the people understand everything around them clearly—that they just *see* with their eyes open—each person under-

stands how others feel about things, and his sympathy for the other fellow is stronger than his own selfish desires! What a world! No hate, no scraps. People getting along pleasantly, quietly, happily. No wars. Even money would hardly be needed. Service to others would be the principal end of living. Think of it! A planet on which every individual is happy!

"A perfect world! And this green Ball has come to us from it! The three unfortunate travelers met their deaths in this dreary desert, before they had gone a thousand yards from their machine. But maybe that was the kindest thing that could have happened to them. Suppose they had gotten among the squabbling, selfish humans on this planet? Gosh! Don't you wish we could get into the thing and sail up to the Perfect Planet, Kitty?"

"What a dreamer you've become, Gus!" Kitty exclaimed, enjoying the poetry of it, as any woman would. "But it's wonderful enough right here. When I think of how wonderful you were the first time you took the gas, my imagination runs away with me. Why! you could increase the business of the garage and make an immense salary; in fact pretty soon you could start a garage of your own or buy out Forbes. Then you could buy a drug-store and a picture-show, and lots of businesses, and you would be the richest man in Chadron. They might make you mayor, and elect you to the Legislature, and you could go to Lincoln!"

While they were on their way home, Thompson explored all around inside the Ball, and finally went away, shaking his head in bewilderment. But the malevolent gleam never left his eyes.

Successful days followed for Gus. He fixed a motor which had hobbled in from Alliance, where no mechanic was able to repair it. He spruced up the appearance of the garage, and put system into its working, and Forbes started a profit-sharing scheme with him. He got along beautifully with Kitty. Life was a thrilling inspiration when things went smoothly and efficiently. Even Forbes began to respect him.

On the fifth day, however, little blunders began to creep into his work. A cross word to a customer, a false move in a repair job, neglect of some obvious little word or deed, began to irritate him and make him feel self-conscious. The effect of the gas was wearing off and he needed some more. By this time he had enough of his own way about the garage so that he was able to get into his Ford coupé and drive out to the Ball.

"If things keep on going, I'll soon be able to get rid of this coffee-pot, and get me that keen little Studebaker roadster. But, for the present, I'd better save my money, so that Kitty and I could look for a house."

He left his car as usual at the end of the ruts that are called a road, and started on foot across the sandhills. About half a mile from his car, a man with a rifle popped out from behind a bank and stopped him.

"Can't pass here!" the man said. "Government operations going on."

Gus was surprised. He couldn't imagine any sort of government operations that would be of any good around here. Excavating for some of those buried bones and fossil turtles, perhaps. He said nothing and resumed his walk toward the Ball by a detour. Again he was stopped by a man with a rifle, who said that government operations were going on. He went around a circle of several miles trying to get to the Ball, but found it ef-

fективally surrounded. As he drove home disconsolately in his car, he pondered. These men looked too much on the side of the tough and disreputable to be government men. There was something suspicious about it.

The next morning he felt the lack of the gas more acutely. He was cranky and incompetent, and had several clashes with Forbes. Kitty came in, and after a few words, looked at him queerly, and finally went out with a sad, puzzled look on her face. Then Thompson dawdled in with a triumphant leer. He watched Gus in insolent silence, smoking a cigarette in violation of the garage rule. As Gus threw down a wrench with an exclamation of helpless exasperation, Thompson guffawed in satisfaction.

A light broke upon Gus. He remembered Thompson's trailing him about, and vaguely recollects a car far behind them when he had driven out with Kitty. He stalked menacingly up to Thompson.

"Say!" he exclaimed. "What's the idea? I found that Ball. You have no right to it!"

"Careful with that greasy wrench, Bo!" Thompson warned, glancing out to the sidewalk and exchanging a significant glance with a burly looking tough who stood there. "No rough stuff. For your own good, see!"

"That Ball is mine!" Gus pleaded weakly, seeing the ruffian sidling toward them.

"Try and get it!" laughed Thompson.

"But why are you doing this?" Gus asked anxiously.

"Since I have the upper hand," Thompson sneered, "I can afford to be nice and tell you all about it. I want Kitty. I get what I want. She seems to prefer me to you, except when you've been in that contraption out there. I don't know what it is nor how you do it, but I've proved it. I've followed you out there; and after you've been there, you have a way with people. So, you don't get over there again until I've had my way with Kitty."

He spun on his heel and walked away, leaving Gus stunned.

"And it won't be long, either," Thompson flung back. "I'm rushing her fast."

He stopped and turned back to Gus.

"Then I'll blow up your thing out there. How long will Forbes keep you after it's gone? He has no use for a clumsy tramp. Then what will you do? I can see you now, walking down the railroad-ties in ragged shoes and a scraggly beard, cooking coffee in a tin can. What will Kitty think of you then?"

He walked away, followed at a distance by his uncouth bodyguard, leaving Gus dumbfounded. Thompson's words cut into his heart like ice, and he felt himself helpless. As a result, his work was all the more clumsy and inefficient. It was a busy day, and both he and Forbes were desperately snowed under. Forbes swore continuously.

"You're the damnedest fellow I ever saw. Some days you're good. Today you're just a damned nuisance around here, and I'd like to kick you out."

EVENTUALLY the interminable day was over, and Gus dragged home in hopeless discouragement. With the gas gone, he was lost. Dumbly he turned to Kitty for solace. But, as was his wont, and as is human, he blundered from the first.

"So you've been fooling around with that Thompson again, eh?" he flung at her. He knew it was a tactless

blunder, but it just slipped out. Kitty looked at him sadly.

"He's a crook and a coward——"

"If that's the way you're going to talk to me, you don't have to come," Kitty answered hotly.

A quarrel followed. Gus slammed out of the door and slumped gloomily into the night. As he got across the street he saw Thompson go into the yard and up the steps of Kitty's house. A chuckle came over to him through the darkness.

Gus was beside himself with rage and anger. He stood there paralyzed for a long time; whether it was minutes or hours he did not know. Then he walked; he covered every block in the little town, walking off his anger. Finally, late in the night the idea came to him. He whirled about and ran toward his room. He seized his .22 rifle.

"I might as well get killed as to go on like this," he muttered grimly.

He got into his Ford coupé and stepped on the starter. It was dead. He looked under the hood. The distributor wires were cut. The manifolds were cracked and showed signs of heavy blows. The carburetor was smashed flat. It would take hours of work and expensive parts to repair the damage.

Gus felt a wave of weakness sweep over him, and almost sank to his knees. Everything was going against him. That fiend, Thompson, was too strong and too clever for him. Now he was helpless. What could he do? He was beaten to a standstill.

Desperation however suggests plans, and Gus was desperate. He leaped out of his car and hurried toward his employer's garage, paying no attention to the man following in the shadows at some distance behind. He opened the doors and got into Forbes' big Nash. The motor roared and the powerful car dashed out of the garage. Gus was out in the street, but not before a man had leaped up on the running-board. The dark shape hung on with one hand, and maneuvered something, a gun, with the other.

"East!" commanded a hoarse voice, accompanied by a flourish of the big pistol.

"So, you're one of Thompson's men?"

"East, I say, or I'll put some bullets through the carburetor!"

Gus obediently turned the car East. He was playing for time to think. He was desperate; he gritted his teeth, lights blazed before his eyes, and his head throbbed.

"Hey!" shouted the dark form in hoarse warning. "Both hands on the steering wheel!"

Half a block ahead stood a gasoline pump at the curb, Chardon's rival garage. It was hardly visible in the dark, but Gus well knew where it was. Again the low cunning of the desperate animal was aroused. One hand left the steering-wheel and raised slowly.

"Hey!" the man yelled. "Both hands, I said!"

Crash! The man was gone. There was a thud on the pavement and the clatter of the rolling, sliding gun. The Nash tore on, with Gus at the wheel, having grazed the gasoline pump by an inch, scraping his assailant off the running board, and leaving him behind, a groaning, squirming prostrate mass in the dark.

With pounding heart and muscles tight, Gus continued his course east. He made three miles out of town, described a big circle to the south, and finally turned back

west on the old familiar trail. His headlights were dark. Then, when he reached the end of the road, he crept forward along the sand, with his little rifle ready. He was mostly animal and very little human just then.

His alert ears caught the hum of a car far away, but he could see no sign of it. Disregarding it, he crept on toward the Ball. It was hard to find in the starlight. It seemed that he crept and crawled about wearily for hours, this way and that. Finally he saw it, and realized that he had been near it and had been circling it. He was astonished that he had not encountered any guards.

He crept on toward the Ball. Infinitely careful, slowly as a snail, painfully tense, he approached the towering mass. No one interfered with him. He could see the door above him in the starlight, and no one about. His heart pounding, his head throbbing at the thought of getting the gas again and taking his place in the sun, he rose slowly; slowly he put his head in, slowly he climbed in. It was move, stop, listen; move, stop, listen. Not a sound did he make, nor a sound did he hear. When he got well inside he turned his flashlight toward the drums of the longed-for gas.

"Ha!" chortled the voice of Thompson just outside the door in the blackness. "Just what I wanted."

Gus felt the stab of astonishment go right through his being. Instinctively he turned the light toward the voice, and there was Thompson climbing to the door and leveling a gun at him.

"Now you'll show me how you work your pretty little racket," Thompson gloated. "It might do me some good after all. After that, what becomes of you won't interest anybody."

Gus' muscles tightened.

"I might as well get shot as go on with it," leaped through his brain.

Gus leaped, gathering every ounce of strength.

It was terrific. He had forgotten the diminished force of gravity within the Ball. He hit Thompson like a flying projectile out of a gun. Thompson went down with a grunt, firing his gun wildly once; a second or so later the flattened bullet tapped back to the floor. Gus rolled over and over and found himself standing on his head. He recovered his balance, and by the aid of his flashlight secured Thompson's gun and threw it out of the door. He clutched his fingers to get them around Thompson's throat. At that moment, Thompson fell and landed on his back and neck with terrific force.

Both of them staggered and rolled across the room, into some fragile things. There was a smashing and a tinkling of broken fragments. The crackle of a blue electric spark drove them in opposite directions. Gus still had his flashlight, and he searched the place with it for Thompson. He was aching to get his hands on Thompson, knowing that he could shake him like a terrier shakes a rat. He discerned him bending over some smashed things. Thompson suddenly straightened and something crashed down on Gus' hand, making it numb and painful. The flashlight fell to the floor and broke, leaving them, in darkness. In another moment, Thompson had leaped upon Gus, taking him by surprise.

Gus, however, was more familiar by this time with the decreased gravity, and thought of it at once. A great heave of his back sent them both up into the air, and be-

fore they alighted, Gus managed to get a more advantageous hold. In a tight clinch they rolled about, rose, staggered, made wild plunges and surprising leaps, smashing into things, and wrecking every breakable article about the place.

They crashed into the stacks of metal cylinders several times, bringing forth a resounding clang. Gus was slowly getting a better hold under Thompson's shoulder and in front of his neck, and bending him backwards. A sudden kick of Thompson's sent them reeling away from the stack of cylinders, and Gus' coat caught on some projection and gave a resounding rip. At the same time, a sizzling, faint but distinct, began, though neither of them heard it; nor did either of them note the penetrating, crab-apple-like odor. Gus was straining to break Thompson's back, and Thompson was wildly reaching for something with which to crack Gus over the head, but gradually his soft muscles and dissipated habits were telling against him. He was weakening.

Then, as they rolled and catapulted into the end where the machinery stood, and slammed into a caseful of apparatus, there was a loud crack, the blue flash of a spark, and both of them twitched and lay still.

For many minutes they lay there, and everything was silent except the faint sizzle of the escaping gas. It began to look as though the long struggle, for success and happiness and a girl, had ended equally and conclusively for both of the two dark, motionless forms stretched on the floor. An electric charge, disturbed by their combat after its long interplanetary journey, put a sudden end to the conflict.

After many minutes, one of them stirred, gasped, and breathed deeply; and in a moment the other did the same. There were groans and sighs and turnings over. Consciousness returned gradually to both of them at about the same time. Both sat up together and faced each other in the darkness. Both staggered to their feet, still silent. Finally, Gus spoke first.

"Are you all right? I hope I haven't hurt you."

Thompson shook his head, as though that were far away from his mind.

"I've been a fool," he said.

"We all are—most of the time," Gus replied.

"I'm quitting my silliness, and being fair from now on. We'll let Kitty herself decide between us."

"You mean—" gasped Gus, "—we're friends?"

"The only thing to be."

They shook hands impulsively, and forgetting the lowered gravity, executed a big leap upward and toward each other.

"As long as the gas holds out," Gus reminded. He explained the action of the gas.

"That means," Thompson said, stepping over to shut off the valve from which the gas was still escaping, "that we'll have to use it regularly; and as soon as possible have it analyzed so that we could make some more. We'll both use the gas, and if Kitty prefers you, you're welcome and have my congratulations."

"Then we'll set up and manufacture the gas, not only for our own continued use, but for others. We'll supply it to begin with, until others get started. Before long, the whole world can have it. Then indeed old Mother Earth will be the Perfect Planet."

The Lemurian Documents

By J. Lewis Burtt

No. 3: Daedalus and Icarus

WHO said that flying is a modern science. Way back, in the days of Daedalus and Icarus, it was thought of, and perhaps even tried—though necessarily within a very limited circle. This is the third of the already much heralded series of modernized mythological stories.

Illustrated by MOREY

IN the Place of Assembly before the Palace of Rapani stands a beautiful, white marble statue of a winged man. The pedestal is inscribed with a single word

"DYD-ALLU"

Further description is totally unnecessary, for every child in Mur knows the story of the great pioneer of flight, the man who first began the conquest of the air. This name of Dyd-Allu will live in the hearts of our people to the end of time, for in opening the way to our conquest of the air, he also restored to Mur her lost greatness.

The story is here recorded as in the ancient manuscript which for three cycles has been among the Royal Archives, but which has now, with age, become practically unreadable. The language in which the tale is told has been changed to suit our modern tongue, but the facts remain as in the ancient record.

In the forty-first year of the second third of the twenty-eight cycle of Mur, the land was devastated by a bloody war between our empire and our great northern enemy, the Empire of Mingan. Our armies were decimated, our navy defeated, and tens of thousands of our warriors made prisoners.

The Mingans, the most callous and blood-thirsty race on the earth, forced us to conclude a shameful peace, among the terms of which they insisted on holding as slaves the men who had been taken captive.

But this is not the history of that war—the greatest defeat that Mur ever suffered—it is the story of one of those prisoners, a man through whose genius and courage, Mur was to regain her freedom and rise again to a position of world domination.

After the conclusion of the peace, the Mingan emperor ordered all prisoners to be set to work according to their ability and training. Among the little group of nobles, who had been captured, was a man of forty years of age, who had been one of the most skilful of the artificers of Mur. This man, Daedalus by name, with his young son Icarus, had been captured in a raid on a Lemurian munition centre, and was perhaps the most valuable of all the prisoners.

For some time he was kept closely confined in a cell, as he had refused to assist his enemies in any way. Finally, one day, an armed guard appeared. Unlocking his cell, they ordered their prisoner to accompany them.

With a bold and careless stride Daedalus marched along with them. Only in his heart was terror unspeakable. He knew only too well what happened to recalcitrant prisoners in Mingan. Never would he be able to forget the nights and days when, in his lonely cell, he had been forced to listen while, from the dungeons below, came sounds to chill the blood—groans of men in torment, whimperings of those exhausted by suffering, screams of those whose torture was beyond endurance.

Still he knew that he would never aid his foes. Others had suffered and stood firm. He was a noble of royal blood and could do no less.

Little did he know the craft and subtlety of the Mingan emperor, that monster Kat-Su-Chang, whose name is still a byword, even in his own land, for fiendish cruelty. Through passage after passage he was marched, until he was brought into a very chamber of horrors. On a low seat sat the evil Kat-Su-Chang, while all around were instruments whose very appearance struck terror to the soul.



For a time they flew together. The clacking
rattle of their wings made conversation very
difficult, and it was some time before Daedalus
noticed that his companion was dropping be-
hind a little.

"Will you obey?" asked the emperor with a wicked leer.

"Not though you tear my body to pieces will I do the bidding of an enemy—least of all an enemy such as you," replied Daedalus. Then, for a moment letting loose his iron self-control, he cursed Mingan and its emperor with all the fury and bitterness of his passionate nature.

"Well now," continued the emperor, after this outburst was ended, "If I were not a just and merciful prince I should have you punished for that. I will, however, be generous and forgive the insults. Truly I know of no man in all Mingan who possesses a tongue such as thine."

Daedalus, now again in full control of himself, snorted his contempt.

"Do not hesitate, O! Kat-Su-Chang, to entertain yourself. Have no fear that I shall hurt you. A dozen guards should be sufficient to protect you from the assaults of one unarmed prisoner, fat lump of evil jelly though you are! Show your courage, old man, my chains will guarantee your safety now, but—be warned. *THE CURSES I HAVE CALLED DOWN ON YOU SHALL BE FULFILLED!*"

The intensity with which this prediction was flung at him was such that the old emperor, coward at heart, paled to the lips. Then he shook off his forebodings.

"We shall see," he remarked. Then, to the guards, "Bring in the other one."

From a side chamber appeared two soldiers leading between them a lad of about eighteen years of age. As they entered, Daedalus bit his lip to check a groan of anguish, for the lad was his only son, Icarus.

"Now, friend Daedalus, I think you understand," spat out the evil king. "I think you will be glad to do as I say!"

"No father!" burst out the boy. "Betray not Mur for me. I can endure!"

How bitter the struggle raging in Daedalus' breast can only be guessed. White-faced, he stood.

"You would not, could not do this thing!" he said at last.

"Oh!—could we not?" came the sardonic chuckle of the emperor.

A signal, and the boy was bound face upward on a slab of stone. Then an executioner moved towards him.

I will not attempt to describe the particular form of torture that was devised for young Icarus. Suffice it to say that only the most calloused and brutalized of the executioners could inflict it and retain their sanity. What, then, must have been the sufferings of the victims.

As the executioner advanced, the emperor glanced at Daedalus and, with a look of fiendish hate, said, "My friend, fear not for your son. We are *merciful*. We shall not let him die. My executioners know well how to keep life in him—aye, and consciousness too—for very many days!"

Daedalus remained immovable and silent—but not for long.

The executioner was certainly a master of his vile art. Daedalus had not believed that even the brutal Kat-Su-Chang would go so far as actually to allow such torture to be inflicted on a young boy, until—shriek after shriek rang out from the boy's lips!

A moment longer he hesitated, then, as the cries of his son continued to re-echo through the chamber, he took a step forward.

"Enough, you fiend!" he cried with a groan. "I will obey! Only give me my son!"

"I thought so," was the emperor's sneering comment, as he signalled for the boy's release. "Take them away. Give him his precious son!"

That night, father and son sat for hours, locked in a close embrace, gazing out of the little window of their cell. Daedalus had bound up the lad's wounds and soothed the quivering nerves, and now the lad was almost recovered.

In a whisper the older man confided to Icarus something of his plans.

"When they laid you on that stone of horror," he said, "a plan came to me. For a while we must pretend to be docile prisoners. We must act so that in time they will begin to trust us. Then, I believe, my plan—mad and impossible though it seems—will be workable and give us a chance to escape.

"You wonder, perhaps, my son, why I did not agree to that old devil's demands at once and so save you from some moments of agony. Forgive me, my boy, that I let you suffer, but it was really necessary. I dared not consent too easily. My agreement had to appear to be forced from me. Now, they will have no doubt as to its genuineness."

"I understand, father," whispered Icarus in turn, "It was terrible, but I can see that it was the only way. Tell me, what is this plan of yours?"

"Not yet, son," Daedalus replied, "It is best that you should not know until we are less closely watched. You will then be able to act quite naturally under all circumstances and there will be no danger of their suspecting you. Only, however, strangely I may appear to act at any time, remember to follow my lead in everything."

Although they worked together and were housed in the same quarters after removal from the prison cells, yet they were given little opportunity for private conversation. They had, however, devised a secret code of signals by which they could communicate undetected, even when their guards were watching them. Without this code it is very doubtful if they would ever have succeeded in making their escape.

For about a year they worked as artificers in the great shops of the Mingan capital. At first they were made part of a gang of mechanics, but soon their work proved to be so excellent and accurate that they were transferred to a separate building, where they worked at the designing and building of complex and intricate machines. Never did they allow their guards to suspect the fires raging within them, and so after a while they were allowed a considerable amount of liberty.

Each of the prisoners, who were engaged in skilled work, kept a bound note-book in which he recorded all work done. One day, apparently by accident, Daedalus dropped his book, and out of it fell a sheet of paper.

The supervisor, being somewhat bored with his job, glanced idly at it as it fell. Icarus, who was near by, was about to pick it up for his father, when a code sign stopped him.

Daedalus appeared not to have noticed the paper, which lay on the floor in sight of the supervisor. This latter, after the first glance, had taken no notice of it, which was not by any means what Daedalus had intended.

After a few minutes he again found occasion to refer to his note-book. This time, as he opened it, his face

took on a well-simulated look of consternation. Acting on another signal, Icarus looked up and, seeing his father's expression, exclaimed

"Father, what's wrong?"

"Nothing, son," replied Daedalus. Then in a whisper, which was, however, loud enough for the officer to hear, "I've lost it!"

As he spoke he saw the Mingan look sharply at him, then stoop down and pick up the fallen paper. Nothing could have worked better!

A short time later the officer took his departure and in the few minutes that elapsed before his successor arrived, Daedalus was able to whisper to Icarus, "Fine, son! It worked! Now be prepared for trouble!"

True enough, trouble was not long in coming. Two days later they received orders to report to the Chief Supervisor, who immediately took them to the emperor himself.

For some time the evil old emperor sat and looked at them in silence, but not a muscle of either of their faces quivered as they stared back at him. Then he picked up a paper, which they recognized as the one which had been dropped from Daedalus' book.

"Is this yours?" came the curt demand.

"Er—yes," came back the apparently reluctant reply. "But it is of no value." Daedalus added hurriedly.

"What is it?" went on the harsh voice of Kat-Su-Chang.

With a sudden change of attitude, Daedalus looked up.

"I shall not tell you," he replied insolently.

"Oh! Will you not? We shall see!" came the rejoinder in a tone that, for all its silky smoothness, carried a very evil menace.

Daedalus reply to this was merely an expressive shrug, whose deliberate and studied insolence could not be missed.

"Shall we then adjourn to the little apartment where we last met?" went on the smooth voice of the emperor. "I am sure your son would be charmed to provide a little entertainment. He has such a beautiful and expressive voice!"

As Kat-Su-Chang turned his head to summon the guard, Daedalus made a quick sign with his hand, a signal that was at once read and replied to by the young Icarus.

Silence followed. A silence charged with such devilish import that the two prisoners could scarce keep their self-control.

As the guard drew aside the curtains to enter, Icarus threw himself at his father's feet with a sobbing cry.

"Father, oh my father! I cannot! Coward that I am, I cannot face that dreadful torment again! He is our master. Give him his will, but oh! spare me, my father!"

For a while his sobbing pleas increased in violence and intensity, then his father, obviously struggling with himself, burst out, "So be it, son!" and turning to the now chuckling emperor, "Once more you win, Kat-Su-Chang, but my hour will yet come."

The paper, Daedalus explained, was a part of the plan of a machine which he had devised for enabling men to fly in the air. At first the emperor was inclined to scoff at such an idea, but something in Daedalus' manner convinced him that there were possibilities here of securing a great secret for Mingan.

Finally he turned to his Chief Supervisor and said.

"Take those prisoners back and put them to work to complete their plans and build me a machine such as they speak of. And"—he paused significantly—"see that they do it."

In silence and with bowed heads, Daedalus and Icarus returned to their quarters. Not by the slightest sign did they betray the fact that they had tricked old Kat-Su-Chang into doing the very thing they wanted. In fact, two more dejected and utterly cowed prisoners would have been hard to find anywhere in Mingan.

No time was lost in starting the new work. The two prisoners were eager to get it done for in it lay their one chance for freedom. All the same they knew that they must play a very keen game of wits with their crafty and suspicious captors.

Their eagerness and the rapid skill with which they worked, were cleverly hidden under a mask of reluctance and what appeared to be deliberate delaying of the work. On more than one occasion they were threatened with the whips for their laziness, but always they were careful to avoid the appearance of actual rebellion, causing only such delays as would seem natural for unwilling prisoners to attempt.

The machines which they had planned were very different from the great planes and helicopters of today. They were to copy the actual flight of birds. Such machines are no longer to be seen in the world, but, since they were the means by which we eventually attained to complete conquest of the air, a short description of them will, perhaps, not be out of place. Those who are mechanically minded will find this description of considerable interest. Others are advised to skip this section.

For some years before his capture Daedalus had spent a great deal of time studying the flight of birds. He knew that man has every muscle needed for flying, but that these muscles are so small and undeveloped that they are of no practical value in any attempt to fly by means of purely mechanical wings.

In thinking over the problem of human flight, he had concluded that it would be possible with attached wing formations, provided that the power of the muscles could be amplified and reinforced by some device. The difficulty had always been that any such device must of necessity be somewhat complicated, and this had meant such great weight that it would be impracticable for that reason alone.

His introduction, unpleasant though it had been, to the beautifully designed machines of the Mingans had, however, finally convinced him that it would be possible to construct a usable device. It was a rough sketch of this that he had deliberately allowed to fall into the hands of Kat-Su-Chang.

Now that he was made to work on his own machine he was, of course, allowed to requisition such supplies as he needed. In general he ordered only sufficient for the construction of two machines, but for some parts he obtained enough material for making additional pieces, giving as his reason that he needed to experiment with differing types.

The wings were his first consideration. He had found out that the curved surface of the bird's wing was the most efficient, and so he designed a framework of similar shape. The wing span was about sixteen feet. This he knew to be small for the weight to be lifted, but he

feared that a larger wing would be unmanageable in a variable wind.

For his framework he used a tubular structure of an extremely light but strong alloy* carefully braced to move as a rigid structure when operated by the movement of the arms.

On this frame he very carefully fastened a complete covering of a light semi-flexible material** arranged in overlapping strips. These strips were hinged and kept in place by very light springs, and so arranged that on the up-stroke they opened and allowed the air to pass through them. On the down-stroke and when the wing was stationary they remained closed, of course.

The great difficulty was to get a sufficiently quick movement to the wing on the up-stroke to give it an *actual* rise. The tendency of the body to fall was apt to prevent the apparent upward movement from being anything but a relative one.

This difficulty was overcome by making the wing in two sections, the rearmost part being rigid and tending to prevent a rapid fall of the body. (It was, of course, from this rigid wing that we got the idea of our modern plane.)

The actual making of the wings was far from being as simple as it sounds. (It should be remembered that the only tests that could be applied to the machine were laboratory tests. There was no possibility of making any experiments of a *practical* nature). Each individual "feather," as they called the narrow strips, had to be exactly right and fitted to its neighbors, so that the whole structure would form an air-proof surface.

Then, too, Daedalus knew that a bird's wing does not move straight up and down, but has a kind of forward curving motion on its down-stroke. To copy this movement by the motion of the arms was not difficult, as it somewhat resembled the action of swimming, but to design the wing so that the motors could reinforce the arms in this peculiar movement, proved extremely difficult.

At least a dozen designs of connections were tried and, finally, one which seemed the best was adopted. Here was a case where the extra material was made use of. The rejected parts were not destroyed (as would have been the case if all the materials had to be accounted for) but were laid aside in case they were needed again. This enabled Daedalus to substitute in a machine a part of inferior design, while keeping the perfect one ready to be slipped in at the last moment, when the opportunity for escape should occur.

This plan was adopted with several parts of the machines so that the two ornithopters as they stood in the workshop, apparently all right, were really incapable of being used. By this means the inventors made sure that, if they could not fly them themselves, no one else should. They knew that if anyone tried to fly with the incorrectly rigged wings, he would kill himself and, incidentally, smash the wings beyond hope of repair.

When the wings were finished, the problem of steering was tackled. For this an arrangement something like the steering and tail fins of a modern plane was used. This arrangement was controlled by the feet and legs.

Next came the difficult part—the design and arrange-

ment of the motors for amplifying the arm movements. The great problem was to employ a sufficient number of motors without making the total weight more than a man could carry. In addition there was the question of carrying fuel for the motors, and, indeed, this was really the main difficulty.

The arrangement and construction of a group of light motors was carried out without much difficulty. In fact the Mingan types of motors were so efficient that the total weight was even less than they had expected.

The question of power supply was finally solved by Icarus, who invented a device something like a storage battery, but of exceedingly great capacity in comparison with its weight.

Even so, the total weight of each ornithopter was very close to two hundred pounds, and it was obvious that a man would not be able to rise directly from the ground. Like the eagle he must start from some eminence and gain initial speed by a downward dive. The roof of the workshop was therefore prepared for this, and the machines were finally assembled up there with merely an awning to protect them.

When the work was nearly finished, Kat-Su-Chang paid a visit of inspection to the workshop. He poked around trying to look wise, but it was very obvious that he understood very little of what he saw. After making a great show of examining everything he turned to Daedalus.

"So you expect to be able to fly with these things?" was his questioning comment.

"Yes, of course, we do," came back the surly reply.

"Well, my friend," responded the sneering old emperor, "That's just where you're wrong. Do you think that old Kat-Su-Chang is such a fool? Did I not see through your little plan when you began to build *two* machines?"

"How easy for you and your son to fly away once you got into the air!"

"Did you *really* think you'd get by with it? Now listen," he went on, a harsh grating tone creeping into his voice, "Your so clever plot is all nothing. I'll tell you what *will* happen!

"Before you make any trials you will instruct two Mingan officers in the use of the machines. Oh, me! they will not make the first flight, their lives are far too valuable."

"The first flight will be made by *your son*, and he will go *alone*. He's a fool like all you Lemurians. He will not try to escape without his father. If he is killed, it is of no consequence. If not, then my officers will make their flights, after which you will return to your prison and forget all about flying machines."

"Fool," he went on, lashing himself into a rage, "Had we never discovered your plans you *might* some day have gone free. We Mingans know how to reward a brave man, even if he *is* an enemy. Besides," he added as an afterthought, "you *might* have been more useful to us that way."

"Now you have sealed your own fate. Never shall we let you escape to take your secrets back to Mur!"

As usual, Daedalus stood silent, looking at the old Mingan with an expression of utter contempt. He knew well that this expression was the one thing that got under that tough and callous side.

"Well, have you nothing to say about it?" rasped the now infuriated monarch.

*We are not certain, but from the description it may have been an alloy of beryllium.

**From subsequent events it seems that this must have been something similar to our celluloid.

"No," replied Daedalus, "It's exactly what I expected you would do."

His calmness roused Kat-Su-Chang to a pitch of almost maniacal fury. For a moment it looked as if a session in the torture chamber was about to follow. Then, realizing that the machines were not finished, and that until they were finished, they would be of no use to Mingan, the fat old man, on the verge of apoplexy, strode with what little dignity he still possessed, from the building.

"Now for it!" whispered Daedalus to his son, as soon as the coast was clear. "Let's get busy!"

Before the official hour for stopping work, they had unostentatiously removed all the dummy parts, inserted the real ones, and generally made the machines ready for flight.

Back in their cell, they took out their note-books and from the covers and back of these they extracted a number of small metal tools. These they concealed about their persons.

Not for nothing were they the most skilled of artisans. It had been a dangerous, though not very difficult job for them to make and secrete these tools as occasion presented itself.

Not for nothing had they taken particular notice of the daily searching of their persons and clothing. Every stitch of their clothing, they knew, was examined every time they left their work, but never were their note-books examined if they put them down on the table when the search was conducted. Only if they carried them in their pockets did the guards think to examine them.

About an hour before dawn next morning they silently opened the locks of their cells, slipped out and relocked the doors behind them. Then, cautiously, they crept up to the top floor of the building.

A drowsy sentry lounged in the corridor leading to the roof. To get past him was their biggest task. With infinite caution they moved forward, gliding along close to the wall. The light here was never good, but it was enough to betray them if the sentry should suddenly become suspicious.

Taking from his sleeve a tiny catapult, Icarus fitted a small object into it and, aiming at the door beyond the guard, he let drive.

The tiny projectile, a small vacuum bulb, struck the door and burst with a loud smack. Instantly the sentry swung around and aimed his weapon at the door. Without an instant of hesitation Icarus sprang forward, and the unfortunate guard, before he could recover from his surprise, found himself seized in a powerful grip. A hand over his mouth prevented any outcry and, a second later, Daedalus's thin steel blade had pierced his heart.

It was only the work of a moment to take the keys and open the door, leaving the sentry apparently still ounging against the wall of the corridor.

The fitting on of the wings occupied some time. On the ground they were clumsy and heavy at the best of times, and now the two men were forced to work in the dark and without making the slightest sound.

They had timed their escape well. Their wings were scarcely adjusted when the first streaks of dawn began to brighten the eastern sky. This was exactly what they had planned. It was light enough to allow them to avoid obstacles, and yet obscure enough to give them

a chance to get well into the air before they were detected.

For a long moment they looked into each other's eyes. Each knew that it was the supreme moment of their lives. Death or triumph would be theirs within a few moments!

Daedalus climbed up on to the parapet, closely followed by Icarus. Then, together, they dived headlong into the air.

Down they drove, faster and faster. Would their wings support them or would they crash to death on the stone paving below?

A movement of the wings and the fall became a curved path. With fifty feet to spare they swooped upward in a long gliding arc. The tense moment of uncertainty had passed. They were *FLYING!*

Using the long curved sweep of the arms that they had practiced so carefully, they began to beat the air with their great wings. Those few persons who were abroad at that early hour stood agape to see these huge bird-like creatures slowly rise with an undulating grace, and fly off towards the coast.

Before the prison guards had time to grasp what had happened, the two aviators were a couple of hundred feet in the air, and before anyone had recovered sufficiently to give the alarm, they were safely outside the city.

Kat-Su-Chang's rage on hearing the news was terrible. He raved and swore; he threatened his guards with every imaginable torture; he vowed to wipe Lemuria from the earth.

In fear and trembling a guard approached with a message. The emperor snatched it from him and read:

"Good-bye, Kat-Su-Chang. In the name of Mur we thank you for all the assistance you have so generously given us in perfecting the art of flight.

"You will pardon the somewhat unceremonious manner of our departure, will you not?"

Dyd-Allu } Princes of Mur and
Ik-Arru } Lords of the Upper Air"

Then indeed did Kat-Su-Chang go mad. His attendants and guards fled for their lives. Such Berserk rage even they had never seen. Woe betide any one who got within range of that human fiend!

Neither knowing of nor caring for Kat-Su-Chang's troubles, Daedalus and Icarus flew onward, now climbing upward, now gliding gently downward again. All day long they traveled over the boundless ocean, until for very weariness they were ready to fall.

Towards sunset they sighted a small island, and, soon after, spent and famished, they landed on its shores.

Hiding their wings in a small cave, they went inland in search of food. The island appeared to be uninhabited, but they found sufficient wild fruit to satisfy the worst of their hunger.

For two days they rested, and on the third morning they set out again, starting this time from the edge of a cliff.

For a time they flew together. The clacking rattle of their wings made conversation very difficult, and it was some time before Daedalus noticed that his companion was dropping behind a little. He slowed down and signaled to the lad, who replied that he was all right, but had slowed down to rest a while.

At noon they stopped for a while on another little islet. It was there that Daedalus first noticed that

Icarus seemed to be trying to hide some difficulty from him. The older man determined to find out what was the trouble, and finally made Icarus confess that his left arm was troubling him. Some of the muscles of his left side had been injured by the torturers and had weakened under the strain.

There was, however, no alternative but to continue. To leave him behind on that little patch of rock, without food or shelter, meant certain death before he could be rescued. Daedalus went over and made some more adjustments to the boy's wings.

"There," he said, "I have set your motors on the left side at their maximum power. They will support you now without your having to use so much effort, but be careful of them. Do not try to fly too high or the increased strain may overload them and cause them to heat too much."

For another couple of hours they flew on. Icarus seemed to be getting along without difficulty when they sighted a vessel below them near the horizon.

If Lemurian, they were saved; if Mingan, they must avoid recognition.

A closer approach soon showed it to be an enemy. Their only hope of safety lay in passing the ship at a high altitude, so that they might be taken for large birds. For Daedalus, this was easy, but for Icarus it was somewhat risky. His motors were already rather too hot from the extra load they were carrying.

He didn't hesitate, however. Forcing his weakened muscles to their limit, he beat his way upward, driving his wings as fast as he possibly could.

Those on board the Mingan vessel did not take much notice of them as they winged their passage overhead. As had been intended they undoubtedly took them for very large birds.

For a mile or two they continued at an altitude of about two thousand feet. (A rough estimate made by Daedalus later on, when he had become more experienced), then they commenced to glide downward to cool their motors.

Too late! Even as they began to drop, a tiny wisp of blue smoke appeared over Icarus' shoulder!

Frantically Daedalus motioned him to dive, even into the water if necessary.

It was of no avail. Within five seconds the scorching motor had set fire to the "feathers," and almost immediately Icarus was a roaring mass of flames.

Helpless, Daedalus circled round his son. To be forced to watch his only child perish in such dreadful fashion, almost in the hour of victory, was bitter indeed. For a moment he came near to diving into the sea along with his son. Then, remembering his empire, he recovered himself.

Slowly, oh, so slowly, Icarus seemed to fall, but at length the flaming mass plunged into the ocean with a sizzling splash. All was over!

Only a few charred embers remained to mark the grave of the first martyr to the science of flight!

Wearily and with a broken heart, Daedalus swung sadly away and took up his long flight again.

Near sunset of the third day the people of the city of Fua-Tak saw a great bird approaching from the sea. Never had they seen so gigantic a bird. It seemed making for the city, as though wounded or exhausted.

Crowds began to gather.

What was their amazement when they at last per-

ceived that this was no bird, but a winged man! Was it one of the Gods? Were divine favors to be showered on their city?

The weary traveler flew on until he reached the open space before the governor's palace. Then, unsteadily and with difficulty, he came to earth on the very palace steps.

The weight of the machine was more than he could support in his exhausted condition and, as he landed, he fell forward on his face, but before the waiting and mystified governor could reach him, he rose to his knees. Supporting himself on one hand, he made the official sign of greeting between princes.

Word was sent immediately to the emperor at Rapani, and arrangements were made to transport Daedalus to the capital—his own urgent request.

It was, however, two days before he was fit to travel.

Out of sympathy for the loss of Icarus, the governor ordered that there should be no celebration made in honor of the great event. When Daedalus was told of this, he called the governor and said to him:

"Prince, I appreciate deeply your kindly thought for me, but neither I nor my son would wish you and our people to mourn for him. He died a hero and an example to all Mur. Let the celebration go on. Today begins the return to greatness of our empire. The secret I have brought back will make of Mur the greatest empire the world has ever known. Therefore mourn not, but rejoice!"

Daedalus was carried to the capital in one of the swiftest and most luxurious land-cars. His journey was a triumphal progress. All along the route the enthusiastic crowds greeted him with flowers and cheerings. Governors of cities and of provinces turned out to meet and entertain him with royal honors.

The last official stop was at a little city about thirty miles from Rapani. As the procession drew up in front of the palace of the governor, a powerful car came from the direction of the capital.

With a shriek of brakes it stopped by the side of Daedalus' car, and out stepped the emperor—the All Serene himself.

The remainder of the journey, and the entry into the capital provided, I suppose, the most elaborate spectacle ever seen in all the empire.

After the official welcome at the palace, Daedalus, exhausted by the strain, was unobtrusively taken to the palace, where for several days he remained in seclusion.

Meanwhile, three of the largest battle cruisers of the navy escorted the royal yacht to the spot where Icarus had fallen—as nearly as could be estimated. No trace of his machine could be found, but, as a mark of honor, a royal salute was fired. Then the surface of the ocean, for hundreds of acres, was strewn with flowers.

The stories of the development of the Air Navy of Mur during the years that followed, and of the subsequent defeat and overthrow of the Mingan empire, which ever after remained a semi-vassal state, are history.

Daedalus lived to see the full result of his work. He had the joy of seeing Mur once more the greatest power on the earth.

He has gone to his son these many generations, but so long as Mur shall stand, the white marble statue of the winged man will need no other inscription than the single name

"DYD-ALLU"
THE END

The Metal Doom

By David H. Keller, M.D.

(Continued from page 119)

admit it. We know a lot more than the men of the first Stone Age but I am not sure that our superior intellect makes us better able to cope with the problems that face us. But one thing is sure. We have to save the worthwhile people; the race has to go on. It may be conceit on my part, but I feel that we are better fitted to make the future race worthwhile than were the men we killed today. I think we ought to build this fort. We can have our architect draw plans for it and I think I know the very place to put it. And we will all get to work. There it a little colony ten miles below us. I will go down there and ask them to join us in building

the fort and they can share it with us in time of danger. We will build it along the lines Hubler suggested and we will call the place Fort Telephone.

"I am sold to the proposition. I do not want to force any of you to it, but you must see that it is the sensible thing to do. If any of you differ with us, you can leave the colony. It may be easier to wave a quill pen than to wrangle with a telephone pole but in the long run the telephone poles will help us live longer."

"For this era is going to be long in stabilizing. It is going to be the survival of the fittest. It is a test of courage. We will build Fort Telephone."

END OF PART ONE.

The Return of the Tripeds

By Neil R. Jones

(Continued from page 135)

Upon the surface of the ocean the long lost Zoromes made the acquaintance of the Tripeds. Professor Jameson then narrated an account of all that had taken place since over five hundred years before when 25X-987 had left them in command of the space ship.

Within the wrecked space ship of the machine men, in which the Tripeds had discovered Professor Jameson, the Zoromes reconditioned themselves with the large supply of metal legs, tentacles and cubed bodies. The space craft had even been supplied with a few empty heads.

"How are we to get back to Zor?" asked 744U-21 contemplating the wrecked mechanism of the space ship with a wave of his tentacles. "The space ships of the Tripeds are much too slow for interstellar travel."

"Bring it to our planet of Grvdlen," advised Glrg. "There you will possess the facilities to repair or rebuild your ship of space."

To Grvdlen they went to the Triped's home planet.

Concerning the Emkls, Glrg made the following announcement.

"The blue dimension is infested by countless millions, perhaps billions, of the Emkls. At a later date, more of the Tripeds will return to the first planet and wipe them out systematically and scientifically, now that our successful pioneering expedition has paved the way."

The sixteen Zoromes resided upon the second planet of the double sun for nearly four years, rebuilding their space ship. When they left for the general direction of distant Zor, their number was increased to twenty. Four of the Tripeds had become machine men, having had their brains removed to the metal heads of the machines. Glrg, Ravlt, Jbf and Brlx were no longer counted among the ranks of the Tripeds.

Manned by the twenty Zoromes, the space ship left the solar system of the double sun, speeding rapidly toward the far off stars and new adventures.

THE END

OUT APRIL 20th

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On Sale at all Newsstands—April 20th—50c the Copy

The Caves of Pele

By John M. Corbett

PELE, the powerful, mysterious, incomprehensible Goddess of Fire! What is her secret? Many are the legends and fantastic stories that attach themselves to this mysterious goddess; many the reasons for the periodic sudden eruptions and just as sudden subsidings of the volcanoes in the vicinity of the Kilauea Crater. Our new author offers his version, which seems to us no more fantastic than other stories which have at some time been confirmed to some extent. At any rate, this is a well-told tale and full of interesting theories.

Illustrated by MOREY

WHEN the inter-island steamship *Mauna Kea* went down with all hands in Alenuihaha Channel, between Maui and Hawaii, there perished my very dear friends, the Fischers. Martin Fischer, who had been my chum in college days, was Assistant Director of the Volcano Observatory at Kilauea, where he and his wife, formerly Helen McLaren, resided.

I had visited them many times while on leave from the Fort; and to say that I was shocked and sorrow-stricken would be putting it mildly. It is not surprising, therefore, that in view of our close friendship, I presently found myself acting in the capacity of executor of the small estate, as the result of instructions left by Martin in his will. And it was while going over his papers that I ran across this manuscript, together with a letter asking that it be immediately published.

Of course I have read it before sending it along; and to me it clarifies certain things that have always been obscure—things I did not fully understand at the time they happened. And since the attempts of the United Empire of Asia to gain control of these Islands, since the alliance of China, Japan and the Philippines in 1973, has become known, I feel, more than ever that this story should become the property of the American people.

Lieut. James Haskel, U. S. A.

78th Co. Coast Artillery,
Fort Kamehameha, T. H.

AN ancient Hawaiian legend concerns Pele, Goddess of Fire, whose home is far down in the blazing Pit of Halemaumau, that lurid spot of activity in the gigantic crater of Kilauea, which lies among the fern and koa (acacia) jungles on the slopes of Mauna Loa. To the imaginative mind, the strange irresistible power just beneath the smoldering crust suggests the supernatural; but to Helen and me, who have dwelt so long beside this throat of Hell, it is a constant reminder of that time in the past, when we saw the wrath of the

Goddess wreaked upon those, who would have ruined our lives—

Rarely passes a night but the fiends of memory soar down to roost over my tormented slumbers, so indelibly did that experience sear itself into my conscience. Awakening last night from the horrors of sleep, I made a resolve! I would write down all—all of the details which we alone share with the Goddess. Then perhaps would my tortured conscience find the relief it has so long sought in vain. I would not wait even until the morning so eager was I to set into motion this new idea of escape from my tormentors. Throwing a wrap about me, I crossed to my window.

Out there glowed the night light of the sleeping Goddess Pele. Its reflection threw into relief the beetling precipice of Uwekahuna, which towers five hundred feet, guarding the western flank of Kilauea. Faintly to my ears came the subdued muttering of the Sleeper within the Pit. Halemaumau, bedchamber of the awful Goddess of Fire, glowed rubescent as her crimson lava coverlet billowed with restless movement.

Perhaps she, too, was assailed by memory spirits of the past—for had she not been my accomplice in that which happened so long ago? Perhaps she, too, would presently awaken with a deep throated cry, to fling off her crimson robes! Then, indeed, would the surrounding countryside look to its safety. For when Pele arises from her red couch, stark terror strikes to the marrow of all in her path. But to my story!

Eleven years ago, when first I made the acquaintance of the Goddess and of the Observatory, I was fresh from the States. Elated at the honor of being chosen for a position in that observatory and eager to take up my new duties, I had landed at Honolulu in high spirits. Everything was unusual in this Paradise of the Pacific! As I rode through the crooked, narrow streets of the city, strange sights and odors greeted me. Strange and mysterious faces rose before my eager vision.

I had cabled my old friend, Lieutenant Haskel, who



Smythson had reached the bottom rung of the ladder and started his frantic climb as the terror reached in all directions over the floor.

was stationed near Honolulu, to meet me. He had sent a message that he would be unable to be at the dock, but would call at my hotel in the afternoon. Passing through the city, I soon arrived at the Moana, where, in accordance with my instructions, I found my new Chief, Professor Jantz, awaiting me. After a brief talk, he left me to my own devices, with the information that the Hilo boat, which I was to take, would leave in two days.

Shortly after lunch, which I had on the broad veranda overlooking the famous beach of Waikiki, with Diamond Head looming up to the left, Jimmy Haskel arrived; and the ensuing hours passed pleasantly indeed, as we renewed our old friendship.

"I say, Martin!" he suddenly exclaimed, as the afternoon drew toward a close, "I've invited two or three friends in to join us for dinner and a dance at the Outrigger Canoe Club—Major McLaren and daughter, Helen, and Miss Rutherford, who is visiting them from the mainland. And, by the way, she—Miss Rutherford—and I, have been engaged since I was last in the States."

"A word in time to the wise, eh? Well, I shall try to confine myself to Miss McLaren!"

At which we had a hearty chuckle, and I went to my room to dress for dinner.

And so it happened that I met Helen. We danced to dreamy waltzes that quivered from steel-strung guitars and ukes, and as the barbaric music stirred through my veins, I knew that I had met the girl I had thought did not exist. Slipping out between dances we strolled along the strand, where the breathless beauty of the moonlit night and the murmur of a gentle surf helped to strengthen the invisible cords which seemed slowly to be drawing us together.

Upon returning to the club, I was presented to a tall, cadaverous Englishman, by name of Smythson, who had obtruded himself upon the party during our absence. I could see that Haskel, who had made the introduction with ill-concealed detestation of the man, was for the moment free, as I was also a moment later when Smythson suavely appropriated Helen, claiming the next two dances. I thereupon joined Haskel, both in detesting the man, and in a cigar upon the veranda, where we found a couple of empty chairs.

"Just who is this Smythson, Jimmy?" I asked.

"No one knows for sure, though many of us would like to," exclaimed my friend, scowling darkly. "He's a perfect devil among the women; otherwise he is some kind of a power in the Asiatic Utilities, Ltd., and it is whispered that that company is subsidized by the new Asiatic Government."

"Rather a renegade then, I take it?"

"Well, yes, but still able to insinuate himself into the best of society here! But, confidentially, our secret service has its eye on him as also has Asiatic Utilities. You may run across him over on the 'big island' occasionally, where he drops from sight at times for several weeks."

"You do not appear dead sold on him, and I cannot say that he makes a favorable impression on me, either," I ventured.

"Hardly! Especially after the way he snatched Helen away!" chuckled Jimmy. Fortunately my features were in shadow.

How little did either of us think of the manner in

which I would actually 'run across' Smythson, or of what his influence would be on my after life.

When the dance broke up I had an invitation to lunch with the McLarens the following day; and during the interval which was mine till boat time, Helen acted as my willing guide in the exploration of the scenic wonders in and around Honolulu. But the most indelible impression that I carried with me, as the little steamer rounded Diamond Head and shoved her stubby bows across Kaiwi Channel, was not of the beauty of the city or of the grandeur of the lofty peaks of Oahu that rose so majestically to pierce the clouds in the receding distance; but of a girl whom I had come to love in the short time we had been together.

Next morning we landed at Hilo and motored up to the observatory, where I hastened to put my baggage in order and take stock of my surroundings. The observatory is located on the north-west brink of the crater of Kilauea, and houses all the intricate scientific instruments, that are used in the study of this volcano, nature's most stupendous work. A couple of hundred yards to the north, and across the road that comes up the mountain from Hilo, stands the Crater House, the hotel which has sheltered thousands of curious tourists.

FOR three months I applied myself diligently to my new work. I received a couple of letters from Helen during this time, and answered; purely conventional correspondence that gave no hint of my feelings. At the end of the third month Professor Jantz left for a week in Honolulu, leaving me in charge of the observatory. I felt that I was progressing quite rapidly, and took pride in answering the questions of our almost daily visitors from the hotel.

At the end of the week the Professor returned late in the afternoon. He went over my reports approvingly; then turned to me.

"By the way, Fischer," he remarked casually, "I just left some friends of yours over at the Crater House!"

There was a twinkle in his eye.

"Friends?" I exclaimed in surprise. "But I haven't it surely can't be the McLarens?"

"Quite so!" he replied, giving my shoulder a fatherly pat. "Now run along and don't let me catch you around here for a couple of days at least. I'll look after things till they're gone."

The sly old fox.

In almost no time I had changed into decent clothing and was presenting myself at the desk. Helen came down in answer to my call, and I held her hand for a longer period than is conventional, I fear.

"What a pleasure!" she exclaimed. "You know, I had to tease Father quite a while to get him to make the trip. We heard the volcano was quite beautiful at this time, and I've only seen it once before. But here we are!"

I drew her to some chairs outside, where we chattered aimless nonsense till the Major found us. At their urgent request, I joined them at dinner in the hotel; and agreed to guide them the following day.

We were up early the next morning. Helen appeared in khaki coat and breeches, with long leather boots. She made a striking picture as we started down the trail leading into the northern part of the crater. Only one thing arose which disrupted my peace of mind—the information that they had met Smythson in Hilo, and

that he would be up the following day. He was evidently keeping close track of the girl! However, I swallowed the bitter pill, and prepared to enjoy myself while I might.

Scrambling over the rough and winding path that crosses the dead lava sea that floors the crater proper, we at length came to the upward bulge that forms the lip of the fire pit. At this point could be heard the hiss and flow of lava in cracks far below the surface, and heat issued from every crevice. With every sense on the alert, we reached the last of the slope and stood in awe at the edge of the pit!

Seventy feet below us the lava surged and rolled, lapping hungrily at the base of the cliff and slapping immense crags which rose from the center of the lake. The ever changing surface bubbled and boiled, while gas hissed through the white-hot waves. Whirlpools formed. Cross currents rippled and pulled the molten crust into long curves and strange designs. Suddenly, gas pressure from some awful cavern just beneath the surface blew forth, throwing lava spattering and hissing far across the lake, accompanied by a hoarse roar, while the surface heaved and circles of waves went lapping the distant crags and walls of the awful pit.

Fountains many feet in height formed at intervals over the heated surface, throwing up spattering columns of liquid fire; then as suddenly to subside, while the white turned to red, then to gray, as the liquid gradually crusted. Then, for perhaps half an hour the lake would appear placid and calm, unbroken by any but slight disturbances; the hot crust smoking and hardening to several inches in thickness. No sound now but the occasional rattle of falling débris from the walls, and a faint ominous swishing of the molten stuff beneath that crust.

But not for long would Halemaumau remain thus! The pent up gases increase their pressure. Suddenly, great cracks rend the crusted lava with jagged reports; white-hot lava pours through and across great slabs of crust, which unbalanced, heave ponderously, and with a terrible slithering noise slide beneath the white-hot rippling surface into the terrible depths! Slab after slab, some acres in extent, following in rapid succession, till the entire lake is again one seething, bubbling mass of molten lava.

We spent the whole day near the pit, moving only when shifting fumes made our positions untenable. As darkness fell, the scene became even more beautiful and terrible. The indescribable play of kaleidoscopic colors on the shifting, swirling clouds of smoke and gas, seemed to produce an atmosphere, not of this earth.

A full moon lit our path back to the hotel. Before parting, I extracted a promise from Helen to accompany me on a trip of exploration to the lava caves—the Caves of Pele—a mile or so down the mountain side. We planned to start early, thus being well away before Smythson arrived. The eagerness with which she accepted the invitation led me to believe that she would be glad of thus avoiding the visitor. The Major decided to remain at the hotel to meet the Englishman.

We started just after sun-up. For a mile our route followed the Hilo road, before reaching the path that plunged to the right into the fern forests. We gained the trail in about half an hour, and had seated ourselves on a fallen koa log just off the road for a few moments, when a large motor car whizzed by. I caught a brief

glimpse of Smythson in the tonneau; but he did not see us. Helen also had seen him, and as I turned to her again, a slight shiver seemed to pass over her. As the morning was warm, I drew my own conclusion as to the cause.

"Helen!" I blurted out. "Does that fellow bother you a great deal?"

She flushed.

"Oh, it's not so bad, really, Martin," she said. "He does seem to hang around a good deal but he's always been most polite and considerate."

"Just the same you don't like him, do you?" I made bold to state.

"Why no! Not exactly. Somehow he gives me the creeps when he looks at me; though why, I don't know. I have nothing against him."

I made no reply to this; but I was acquainted with his type and might have offered some explanation. I held my tongue, however, for the time did not seem propitious.

"Well, let's be going," I said, after a brief silence.

Rising, we soon entered the deeper gloom of the dripping fern grottos. A few feet off the trail on either hand, one would have been completely lost to the world, so rank and tangled were the tropical growths—towering ferns that arched thirty feet above our heads—sinuous, exotic vines, that choked the life from the monstrous koa that here and there rose above the roof of the forest. Ghastly, ethereal wisps of steam floated through the damp undergrowth, escaping from cracks almost filled with rotting vegetation.

PRESENTLY, in the depths of the jungle, we came upon the entrance to the great caves; a jagged hole formed when the roof of one of the passages had fallen. Lowering our lunch box and supplies, we lit the lantern and I went first down the rickety ladder. Helen followed, and we stood on the pile of rough lava, that was formerly the roof.

On either hand Plutonic passageways melted into impenetrable darkness, the light from our lantern but accentuating the dense gloom, which closed around us like a crouching monster of the lower regions. Helen shivered and unconsciously pressed closer to me. Gathering up our pack, and looking to see that our flashlights were handy. I headed into the tunnel to the right, which led westward toward the region of the crater. A few yards found the going easier. The walls were of a smooth, black basaltic glass, formed by the fusion of the rock, when ages ago a stream of white-hot lava had forced this passage through the bowels of the earth.

For an hour or more we threaded our way through the labyrinth, stopping occasionally as I mapped our course and checked distances for the map which we were making of the district. Seepage from the ceiling dripped on us almost constantly. What a place in which to be lost! I shivered at the thought.

Shortly after twelve we reached a great chamber, hundreds of feet across, filled with grotesque pillars and crags. Here we rested and ate some of the sandwiches we had brought. We had penetrated almost two miles, but still the great system spread endlessly before us into the darkness.

Completing my lunch, I left Helen with the lantern and began a search about the great cavern with one of our flashlights. Climbing and stumbling over and around

fantastic masses of lava, I came at length to a jagged crevasse whence floated wisps of stream. The yawning chasm stretched from wall to wall. I had about decided to return to Helen, when my torch fell on the opposite wall, where a conical pile of débris rested its apex just under the entrance of a strange appearing tunnel-mouth. My curiosity aroused, I skirted the great crack till I found a narrower part, and leaped across. Scrambling up the rough pyramid against the wall, I soon gained the passage.

Its significance lay in the fact that it had been hewn by human agencies. Here and there the crumbling roof was shored up with cunningly placed timbers, and from the appearance of the dusty floor, the place had seen recent use. Now I knew that not a dozen persons had ever penetrated this far; and could think of no explanation for my discovery. I went slowly along, past two or three turns, when I perceived a sudden flash of light far in the distance.

Something moved me to snap off my own torch, and in the darkness I retreated to the angle in the walls that I had just passed. The distant light showed nearer at the next flash. I was about to step out and hail, when suddenly I seemed to sense a presence behind me! There was no sound, yet that disturbing feeling that some one or some thing had crept up on me in the darkness persisted. With a single movement, I flashed on my light and whirled about—to receive a crashing blow on the head, after which all things ceased for a time.

When I came to my senses, I was lying bound hand and foot upon the bare floor of a great cavern, which was lit brightly by a dozen electric arcs suspended from the high ceiling. I turned my head, that threatened to split from a blinding headache. Far away, on the opposite side of the place, shadowy forms of men appeared moving among what looked like a huge jumble of boxes and crates. They were too far off for me to see their features; and I gave up trying, as the sound of voices near at hand drew my attention.

With a start, I recognized Helen seated upon a box; a tall man stood before her, his back to me. Something vaguely familiar about his carriage, and the sound of his voice, stirred me; but I could not force my jumbled thoughts into action. I closed my eyes and tried to calm the throbbing in my head. When I opened them, the man had left Helen and was walking away across the cavern. It was Smythson!

Helen was kneeling beside me, whispering, "Stay as you are! Don't let them suspect you are loose!"

And I felt my bonds loosen under the keen blade that she produced from some mysterious hiding place. Smythson had reached the end of the cavern, and followed by all but two of the others, descended from view into a depression that seemed to fill all of that quarter of the place.

"Keep your eyes closed!" the girl continued, bending over me as though examining me for possible wounds. "If we don't get away, it will be terrible! I haven't time to tell you all he said."

I had no time to form an opinion, as our captor presently reappeared at the head of the ladder, that led into the lower level: and paused a moment to shout some instruction to those below. I noticed, as he turned, that he had an automatic at his belt and at the instant a bold plan flashed through my rapidly clearing head.

"Get the rat to bend over me," I whispered, "and

I'll have a try for his gun which is in an open holster!"

The girl nodded in quick understanding, and stepped back as the fellow approached, wringing her hands in apparent trepidation.

"Look! You have killed him!" she cried.

Muttering a curse, the renegade came up and bent over to examine me, even as I had hoped he would. The moment had come! Just as his face came close to mine, my left arm shot up and around his neck, while with my right I slammed a chunk of lava which I had been grasping in the shadow. He went down without a groan, and I thought I had killed him. I had the automatic almost before he touched the floor.

Across the room the two men who had been left started toward us, but at a flourish from the gun they turned and ran toward the passage by which I suppose we had entered.

"Quick, Martin!" gasped Helen. "Come this way! They have guns over there!"

Hand in hand we raced to the ladder up which the now unconscious Englishman had come. No one was in sight. Almost stumbling in our haste, we reached the bottom, only to find ourselves standing by the side of an electric mine-towing car. The rails entered a tunnel in the walls on either hand. I did not know which direction to take; but it was certain we must move, as the shouts of the two men above came nearer; they were bolder now, no doubt, since they had secured arms.

Not daring to hesitate, we leaped aboard the car. I had operated similar machines during my mining course, and quickly found and pressed the starting lever. We began to glide along swiftly into the right-hand tunnel. As we gained momentum, I hastily noted the contents of a half open box upon which I was crouching, and a chill struck me as I recognized our cargo of nitro-glycerin just before the lights from the cavern failed us! A moment of fumbling and I switched on the powerful head light, and a second later swept around a curve. Far ahead the searching rays picked out the forms of several men, who turned toward us as the light fell upon them.

"Smythson's men!" I snarled, jerking the operating lever back and applying the brakes. The car ground to a stop.

"Well, we're in for it now, I guess. There's no reverse on the damned thing."

We scrambled down, and an inspiration struck me. Reaching over, I jerked the operating lever to full speed ahead. For a second the wheels spun, sending a shower of sparks against us; then the car leaped forward toward the now shouting and excited group up the track, gathering speed at every yard. It rushed upon them, and they were forced to flatten themselves against the walls as it swept by.

IN an instant, where they stood was utter blackness; but out of the gloom came cries in a foreign tongue, in which I thought the note of awful fear predominated. And well it might, as we were soon to witness! We turned, and ran stumbling back the way we had come, expecting each moment to feel a bullet tear into our backs.

As we sped out of the tunnel into the light of the great cavern, the staggering form of the Englishman confronted us, blood dripping from the gash in his head; but the menace of his own pistol forced him aside as we

raced for the ladder. The mouth of the opposite tunnel was just swallowing the forms of the two others, one of whom turned and raised his rifle. I pulled the trigger; and he slumped to the earth, a look of surprise and pain distorting his features. His companion fled precipitately.

By this time, Helen had climbed rapidly up, and I started to follow, when the terrific roar of the explosion rocked the earth. Our car had reached the end of its journey and of all usefulness!

The Englishman had turned back to face the tunnel at the moment of the explosion, and stood swaying slightly. A distant muffled sound as of a river tumbling through a rocky gorge began to reach our ears. Puzzled, I stood near the top of the ladder, waiting I knew not for what. With every second the rushing noise grew louder, assuming the roar of a torrent. From far down the passage a single piercing shriek of mortal fear and agony came suddenly, clear above the roar of the fast approaching, unseen something. The renegade still swayed on his unsteady limbs, eyes glued to the dark hole as though hypnotized.

Suddenly, a hoarse cry was wrenching from his blood flecked lips! Turning, he lurched toward the base of the ladder, a look of terror suffusing his ashen features, the like of which I pray never to see again. At the same moment a reddish glow grew brighter at the mouth of the tunnel. With a shout, I sprang quickly up the few remaining rungs of the ladder, and turned to see a molten stream of lava belch forth into the lower reaches of the cavern, accompanied by a roar as of the surf!

Acrid smoke and heat filled the place. Smythson had reached the bottom rung of the ladder and started his frantic climb as the terror reached in all directions over the floor. A crooked, writhing finger licked out and enveloped the base of the ladder. The wooden sides melted with a flash and swirl of smoke! For a moment the long ladder, unbalanced, tottered there over the fast spreading current of death. Even at that moment, God will witness, I reached forth a hand to save it from the crash—but too late! Slowly it swayed ever outward, and with the screaming, ill-fated maniac still clinging desperately to the rungs, took its final plunge into the awful flood!

Turning, the half fainting girl and I raced up the slope past the boxes piled there. Even at that crucial moment my sight registered the gigantic stores of arms, ammunition, and crated field guns!

Through a nightmare of blind stumbling through tortuous passages; of tearing our flesh against the jagged rocks, but ever ascending higher and farther from that death dealing current in our rear, we finally staggered into another lighted cavern. This time, however, it was the light of day which filtered through to us from a crack in the vaulted roof!

The great crack extended through the wall and nearly to the floor. Summoning our remaining strength, we scrambled through, bleeding and exhausted, to fall among the cool growth of ferns that grew all about. I do not

know how long we lay there in a semi-conscious condition. To us came the far off subterranean sounds of explosions. Several times the earth rocked beneath us, and I dragged Helen farther away from the chasm, lest we be thrown back into the depths.

It seemed but natural, a little later, that she was nestled in my arms; while I breathed incoherent tendernesses into her ears.

And as she laid her lovely head upon my shoulder with a tired sigh, I needed no word to tell that she was henceforth mine.

The sun was just sinking over the smoking peak of Mauna Loa when we staggered into the road that passes Kilauea-Iki. Ten minutes later we were in the spacious tonneau of a car from the Crater House, being pried with questions from the Professor and Helen's father, who had become alarmed enough to start in search for us.

That night we learned that the lava in Halemaumau had dropped from the seventy foot level to the six hundred and twenty! This, then, was the source of the crimson flood we had loosed, when I had sent forward the load of explosives to the end of the tunnel! The nitro-glycerin had ruptured a partition that allowed the lake of fire to drain away through the earth; much as it had done countless times in the past, but without the aid of humanity.

By tacit consent, Helen and I refrained from mentioning the fate which had overtaken Smythson and his Asiatic associates, or the fact that we had seen them at all. To our relief, the Major stated casually that the Englishman had called at the hotel, and learning of our absence and destination, soon left with the announcement that he had been called on a trip to Japan. And so Horace Smythson passes out of our lives, and many are those who may wonder at his disappearance!

The following day came news that the flow from Kilauea had found its way to the sea through subterranean passage ways, emerging slightly west of Kahauhou; and that a great commercial submarine belonging to the United Empire of Asia which had been in the vicinity, had escaped from the boiling waters by a narrow margin.

At this, I pondered over the connection of the underground tunnels with their trackage and electric cars, the stores of war, the emergence of the passages upon a little known stretch of coast, and of the presence of the Asiatic ship at this spot. I knew that I might now be lying cold in some deep chasm, while Helen might be far at sea in this same submarine! But Pele has chosen to intervene.

Thus closes my narrative, and the secret locked so long within us is out!

I looked out of my window to where the first rays of the rising sun touch the ascending cloud of vapor from the Fire Pit; shooting with darts of indescribable color the mass as it slowly drifts to the west. Many times in the years has the Pit filled and emptied; but Pele still remains the powerful, mysterious, incomprehensible Goddess of Fire!

Worlds Adrift

By Stephen G. Hale

Author of "The Laughing Death"

AT last, in direct response to the many requests for a sequel to Stephen G. Hale's "The Laughing Death," we are glad to give you, complete in this issue—and this story is complete in itself—"Worlds Adrift." Fortunately, the plot is laid far in the distant future, so we can read about the slight miscalculations in time and speed with thrilled excitement, but with a feeling of complete equanimity and reassurance in the back of our minds. "Worlds Adrift" is scientifically plausible and very convincingly told.

Illustration by MOREY

My Judges

IT is difficult to resume a tale after the lapse of years. Some of the incidents seem to become unrelated, the original setting to fade into dim unreality. Taking up my pen again to write of the events after Joel Murch and I had become separated, each to his own half of the Earth, is like trying to put into motion idle machinery that has been left to rust too long in varying weather: the parts are oxidized and worn down to a sameness that is confusing; I do not know where or how to start the narrative for, as I relive those days in my mind, the events either all take on an equal importance or again fade into a sort of limbo where nothing matters, where nothing has value or perspective.

I must, however, write the story for some day, when my body has dissolved back into its original chemical constituents, I can imagine my children, even Kakomos, my youngest, extending fingers of scorn and accusation at the memory of me; I can imagine them assembled, a sea of earnest faces, in a court of serried rows, sitting in judgment upon my deeds.

"He fooled with the atom," I can hear them say in the absence of any written record, "he tampered with God's forces." "He conceived the theory for the vehicle of their dismemberment, he saw a way to harness their terrific power. When Joel Murch had built those mechanical monsters, the Metal Worms, our parent did not discourage him; no, if anything, he lent his whole-hearted approval and cooperation. When the fiendish contraptions were put to work he did not stay to watch them as he would his own life, but entrusted the task to others. Thus someone was free to approach, unsuspected, to wreak his revenge upon the world, to set loose one of these dread machines, to release forces that in a space of time all too brief had cut our Earth

in two, like an overripe apple. What did our parent do in the meantime? He did not lift a finger, he sat and waited for the end! Brothers and sisters, is our parent guilty or not?"

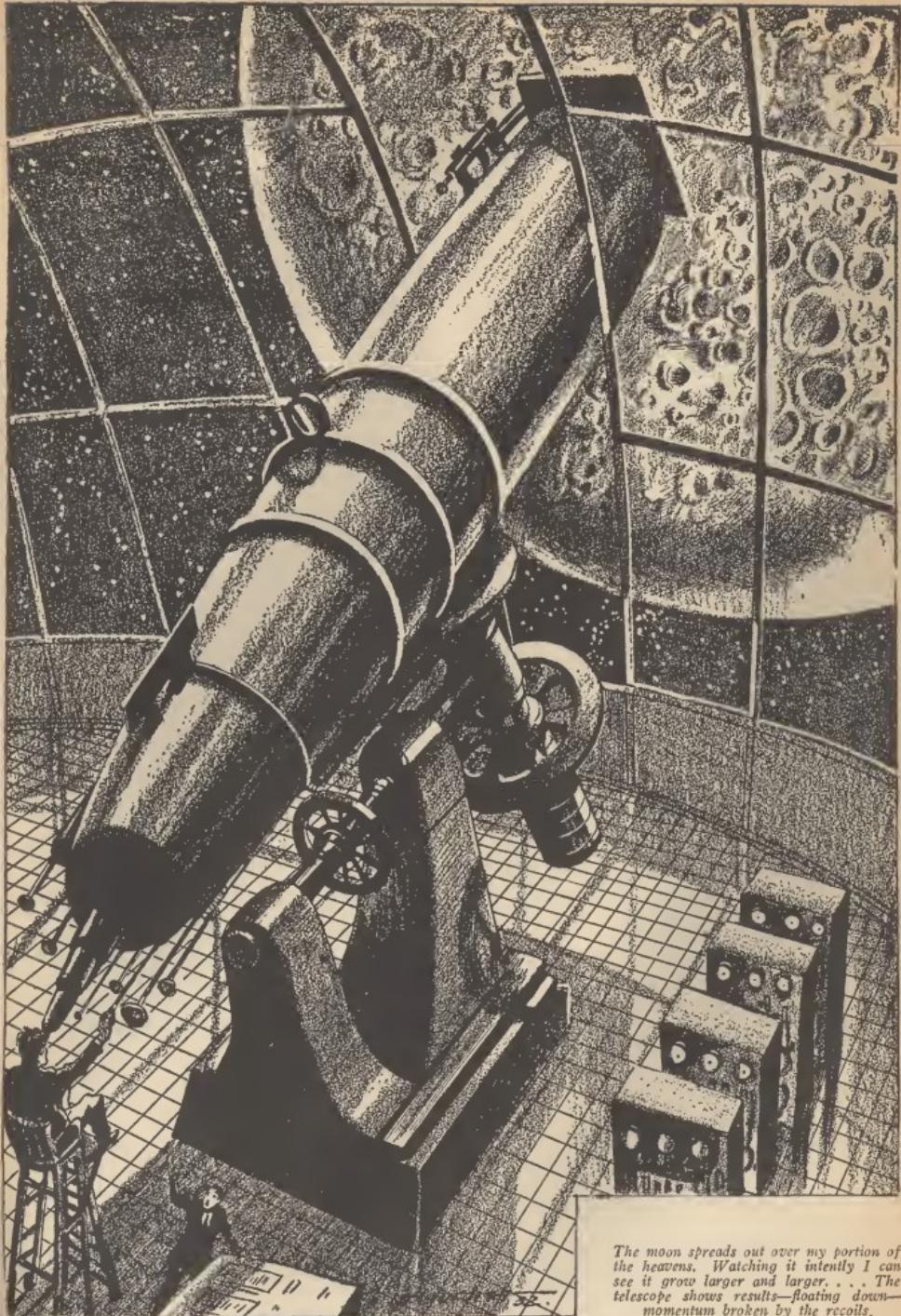
And then I can hear a low hum and then a scuffling of feet as my brood rises and with one accord condemns me with thumbs down. Thus is my memory crucified.

Hilda had foreseen matters differently. One evening, back in those days, she had led me aside into a secluded corner of our retreat safe from our growing family. She had tried to ease the burden. I remember the setting well: museum pieces were all about us, working models of industrial operations, the conversion of waste wood and cellulose into cattle and poultry food, the production of electricity at the mine head, experimental aircraft for penetrating beyond the atmospheric belt, all were there. It was a noisy setting at that hour. The city's ruins were the hiding places for a weirdly mixed animal population. At the fall of darkness these creatures came forth boldly into the open and the din of their cries filled the air. Added to this were the buzzing and screeching of ugly insects that cluttered the sills of the windows or settled in swarms on the backs of awkward forms that lumbered by below. Hilda raised her voice.

"No change yet, Bob?" she asked. "Still troubled?"

I didn't reply. I dislike repetition. Conditions did not change; they were the same day after day; no gleam of hope, no hint of another world for us.

"Don't let it get you," she admonished. "In time you'll forget how we used to live. Our children will never know differently and as for ourselves—why, we'll forget everything—no, not everything," she corrected herself. "There are some things that will stay; you'll always remember the rending of the Earth. The sounds will always be in our ears. In time these memories will gray down to faded images, nebulous, hazy. When



The moon spreads out over my portion of the heavens. Watching it intently I can see it grow larger and larger. . . . The telescope shows results—floating down-momentum broken by the recoils,

we tell the story to our children, or they read your account, it will form a legendary genesis for our new existence."

I was mordant, querulous, aging; my hair had turned gray.

WE went out, picked our way over the upturned pavements to the Precipice where I had lost one of my children. That fearful drop, that 8000 mile cliff where the globe had been ripped apart, had not yet healed. Perpetual geysers, raging furnaces and vast clouds of steam and flying cinders still moved over the vertical plateau. We looked from the darkness of night into the brightness of day. There was neither twilight nor dawn. Night and day met here sharply.

"It's not natural," I groaned. "I'll go mad!"

"No, you won't, Bob. We're just in another world. Just pretend. Our Earth's lopsided and it goes tumbling through space in a crazy fashion, but we'll get used to it."

Why talk in circles? I did not forget. I couldn't. Hilda was wrong. Memories surged upon me, beset me from all sides. I heard Joel's voice again, I sat with him here in Logan Square, I felt him clap me on the shoulder; I lived it all over and over again. We were once more in our Willow Grove laboratory, smoking, arguing, working, watching the swirling atomic world in its haze of blue and violet, once more we were digging gigantic subways and cities under the ground to fend off the hurts of war, remaking civilization according to our lights, once more watching in futile, silent agony the dread work of destruction that came at last. The thought of it was unbearable. If Joel had only remained! Then we might have fought and contrived and perhaps risen above our new environment.

I shook myself and looked upward. No, Joel was up there, thinking of me, perhaps, up there on the Second Earth, a pale orange shape, riding high over the arch of the heavens with the Moon trailing astern. Why had I to be left the sole mature male? Why hadn't fate cast me with Joel and the millions who had crossed the shaking bridges and found safety up yonder?

The Call

WELL, we can sit day after day and month after month until time becomes eternity and we can feel a gnawing inside and we can ascribe it to what we will and then suddenly some trivial matter, some incident will set a flare to that inward fretting and show us the cause is not what we thought. So it was with me. I was constantly hailing myself before an imaginary tribunal, measuring out untold agony for myself for the part I had played in that last earthly drama, only to find in the end that the sore which afflicted me, which burned into me, kept me awake at night, made me pace and growl in the day like a demented soul, was of another kind. The revelation came about suddenly.

We had been living in a certain routine which Hilda and I had planned: the women cooked, instructed the younger children and kept order in that huge building, the Benjamin Franklin Memorial and Institute in which we were quartered while the bigger boys and I, heavily armed against the queer brutes released from the caves of the Earth, journeyed afield. Thousands of motor

vehicles were at our disposal in the ruined city where they had been abandoned at the bridge approaches in the mad scramble for safety. Gasoline, alcohol and other fuel were available, too, from the pumps dotting the street corners everywhere. For our needs the supply was inexhaustible.

Our trips regularly included the big cold storage food plants of the chain stores where perpetual refrigeration had preserved more food of every imaginable variety than our tribe could ever hope to consume. From the toppled skyscrapers and department stores we drew our other supplies, clothing, tools, games for the children, everything. There was not a need, not a luxury even to gems and jewelry but search would reveal ready to our hands in the wreckage about us.

Upon this particular occasion, I sought out what remained of the city's radio shopping center. Our oldest boy, Ottokar, had evinced quite a surprising interest and knowledge in wireless and radio. We found dozens of stores practically unharmed from which we filled our truck with a wealth of parts and instruments to further Ottokar's inclinations. We returned home to the Memorial as we had many times before with no thought of any unusual incident to disturb the quiet of the evening hours.

After the supper dishes had been cleared away, Hilda retired, as was her custom, to the upper regions of the building to send out her radio calls into the thinning atmosphere. This was a self-imposed task that was never neglected. Tonight she went with a dispirited air.

"I'm tired, Bob," she complained; "and I'm beginning to think myself that it's all in vain. There's no one else left on our Earth. We're all alone!"

"Don't go up tonight," I returned. "We'll turn the lights off and have a few reels of motion pictures. There are thousands of films at the Exchange all unharmed. We brought some with us on the way back. Let Ottokar take your place tonight. It will amuse him to talk into space."

But Hilda shook her head and mounted the steps wearily.

At a nod from me, Ottokar followed. The rest of the family gathered about me according to habit for an evening of quiet chatting, perhaps reading aloud or, as likely as not, talking about the dangers from beast, fire, or disease that might lurk in our vicinity. A commonplace evening, a usual pastime.

Tonight, however, was different. I heard rushing footsteps on the stone staircase and Ottokar threw himself into the room, his face pale, his eyes aglow with excitement, his arms weaving the air and showing by every other token that he was bursting with news.

"The radio! The radio!" he gasped. "Someone's calling!"

We were up on our feet in a twinkling, his agitation taking hold of us. As one we made for the wide staircase, but just in time I caught myself and waved the others back.

Ottokar touched me on the elbow.

"They're faint," he warned, "the signals are very faint"; and he slipped under my outstretched arm and hastened back to the receiver.

"Better stay here, the rest of you," I ordered, quivering so that my teeth chattered. "Years we've been waiting for this. Keep quiet, everyone," and I went flying after Ottokar. A call? A call! Someone of our kind

somewhere among the smoking wastes of our slab-sided Earth! And then it happened.

Retribution?

AS I took the steps three at a time, I had a vision, a memory that flashed upon my faculties with lightning-like swiftness. I was in a rocking, swaying building, a pin point in a world of tumult. Once again Joel Murch and I were grappling with a maniac; we were mad ourselves, bloodthirsty. We fell, were up and down again, fighting blindly to kill him who had become the menace to our civilization. . . . We found ourselves outside in a long silent hall, our quarry making for the roof. We pursued him up there amid the roaring flames to a wind-mill plane which bore us all aloft. Our prey was escaping. . . .

Then another vision wiped out the first. On hands and knees, wounded, bleeding, cursing, raving, I was crawling through a maddened crowd expecting to be crushed at any moment but still going on, with no other thought than to kill, kill, kill, to make the hellhound who had brought all this on pay with his life. . . . But he had escaped!

I almost faltered on the steps. My heart was pounding. Jubilantly! Hopefully! I knew now the nature of the sore which had been burning me up inside, which had robbed me of peace and rest. It was the will, the hunger to mangle, to tear from limb to limb, to destroy that arch enemy of mankind. Grubsnig! The very name sent my mind reeling. He must die. In no other way could I find peace again. I knew that!

Someone was answering our signals! Who could it be but this Russian radical? We had scoured the country for hundreds of miles, we had been calling, calling religiously every night and we had found no one, heard from no one. Grubsnig! He alone would know how to survive! Now he was in trouble. He was on our Earth! Within reach, perhaps!

I found myself in the wireless room, panting, sweating, incoherent. Hilda was in a heap on the floor, but I passed her by, making no note of her plight then. Rudely I pushed Ottokar aside and clamped on the ear-pieces. Ottokar left me, took Hilda below, as I found later. The world might come to an end, all vestige of it vanish into thin air forever, but if Grubsnig and I were left I would not care. There was only one thought uppermost in my mind. . . . I was not sane.

The message was still trickling in faintly. Ottokar had already set the recording device and the machine was sending out an endless ribbon of ticker tape. A quick glance showed me the message was the same, repeated over and over again. Obviously some mechanical robot was watching at the other end and at the slightest response would click an alarm or put on a warning light.

I stared at the dots and dashes, vacantly at first, then with the realization that the message was not in the Morse code, nor in any other readily recognizable. Yet there was something familiar about the manner in which the call came in. Evidently I must have heard it before in some past receiving. I leaped to the head of the stairs.

"Hilda! Ottokar!" I called. "Come up here. It's Grubsnig! It must be the Russian!"

There was no immediate answer. I was conscious of

an abnormal quiet below but again I failed to pay any heed to my senses. I called once more, more impatiently. Ottokar came a little reluctantly. The excitement had passed from his countenance: he was paler than before. I did not notice that he came alone.

"Hilda can't come," Ottokar spoke.

I waved that aside. "Hook up the transmitter, boy," I cried, "while I change some of the tubes. We're going to answer that call! Quickly, too. Make it snappy."

"Have you decoded the message yet, Dad?"

I paused, non-plussed. "No," I answered, "but we'll send out a call in Morse. Anything to keep him interested."

"But we've been broadcasting for more than an hour already!"

"Eh? Oh, yes. . . . Well, we'll increase the power. Here, I'm throwing this cable out through the south window. We'll attach it to the Metal Worm. Hustle down and hook it to that power cable painted red. It's down—yes, that's it."

The boy saw it but hesitated.

"Well, what's the matter?"

"If it's—it's this Russian scientist," he said, "don't run any danger, Dad. We don't want to lose you."

I made an impatient gesture.

"And, besides, Dad, if he's mad, he isn't responsible!"

From out of the mouths of babes! He was but nineteen. I watched his broad shoulders receding down the stairs and somehow my pulse beat less rapidly, I was quieter. Ottokar was only an adopted son, a waif we had found cringing and crying after that eventful night but I loved him as my own. . . . But I was getting maudlin, weakening. If that Russian was still about, the lives of none of us were safe. Sane or insane, the chance was too great: his Nemesis must find him.

Last Suggestions

ABOUT a half hour later we had completed our preparations. I turned the switch with a certain hesitancy. I was afraid that the current would be too strong. It came, reduced, of course, from one of the Metal Worms which was still creating electrical energy and would continue probably to do so, far into the distant ages. This same machine was now our sole source of current. Our cooking, lighting, our radio, everything now depended upon this one source.

Ottokar stood beside me, Vera behind me. Vera was several years younger than Hilda and was her close understudy in the care of our large household. Even she trembled with anticipation for who would not in our family? The radio had been our chief hope, our mainstay, which even the youngest regarded with reverence and respect. And thus it was we three stood, expecting we know not what.

The bulbs glowed with a dull iridescence. There was no outward indication of the current that surged through the set; but we knew: the meter was there before us. I approached apprehensively and began to send out my message. I became engrossed and saw nothing but the few square inches of surface over which my fingers were playing nervously. I felt a tap on my shoulder. I made an irritable rejoinder and this time a hand closed about my arm. Ottokar pointed. The tubes were black, the set was dead!

"Too much power, Dad."

I found a seat, hot and tired I tried to think; but my brain would not function. I saw Vera.

"Where's Hilda?" I asked.

"Downstairs, Bob."

"Tell her to come up. She knows more about this radio business than any of us."

A pause and then: "She can't, Bob."

"She's unwell, Dad."

"Hilda's worked hard all these past years, Bob. She's been hard put to it lately, losing strength.... Worried.... Afraid of the future."

"Why didn't someone tell me? I'm blind."

"She wouldn't have it and now she's in a bad way.... She's dying, Bob!" and Vera started to cry.

I stood up, dazed.

"Dying?" I repeated. "Hilda dying? She must not!"

I plunged down the stairs in the grip of fear. I felt frail and helpless in the face of this new disaster. It must not happen, it must not happen, I repeated to myself.

Hilda was in her niche, a limp, motionless shape on the sheets, eyes closed, apparently already in her eternal sleep. When, however, my shadow fell over her she spoke but almost inaudibly. I slipped to my knees beside her couch to catch her faltering words.

"Bob?"

"Yes, Hilda."

"Too much... for... for me, Bob... excitement... the... the climax... waited so long for it."

I tried to stop her, to soothe her.

"The lights... too bright," and she closed her eyes.

The lights were extinguished, leaving us in the soft twilight glow of a street lamp. I remained beside her bed, helpless, for this was a situation which I had not expected to have to confront. I was not a physician; I was utterly futile even though we had medical stores in abundance. I did not know how to begin, how to diagnose, but as matters developed, there was nothing that I could have done.

"Bob... the... message?"

"It's an unknown code, Hilda," I said, slowly, "yet it sounds familiar."

"Who...?"

"Who, but the Russian, Hilda?" I anticipated her. My voice was even, low, without a tremor.

Her eyelids fluttered. She was not looking at me.

"I wonder... maybe... someone else," she whispered.

The children had gathered, recognizing that something untoward was happening. One of them coughed, smothering the sound until but a muffle of it reached the bedside. The pallid lips moved.

"Mistake... to... to send in code," she breathed. "Talk into... mike yourself, Bob." Her voice grew stronger; her will power struggled for supremacy. "Bob, more power, too.... Use the... the Worm." Her hand fluttered toward her bosom. Vera bent down.

"What is it, Hilda?"

"Give him—"

Vera removed a sheet of paper which I found later was covered with a sketchy wiring diagram, rendered freehand with a fountain pen. It was Hilda's work and showed a new hook-up for our transmitter. Her lips began to move again; I leaned closer.

"For the new power, Bob," she said. "Use the V T 66... tubes."

"We haven't—" I began.

"They... they were making some... International Radio... in Baltimore"

I remembered tales concerning the new wonderful experimental tube in various scientific journals just before the catastrophe.

"But, Hilda," I said, quietly into her ear, "in Baltimore?" Her eyelids moved. "You forget. Baltimore was south of the Precipice. It's no longer there. It's out in space now, Hilda, there, up there on the Second Earth with hundreds of other lost cities!" and I pointed to the orange half just visible in the upper part of the window.

For a long time there was a heavy silence in the room while we both studied the distant fragment. Hilda was either thinking or resting.

"Bob," she went on, "that tube... try Schen... ecstasy... they had two." Her eyes were still centered on our twin Earth. "And," she added sleepily, "some day... you must... must bring... the parts... together... the Earth, Bob!"

Vera signalled me away from the couch. Hilda was breathing evenly, sleeping. We withdrew gratefully, glad that slumber had crept up on her. While Vera vanished into another part of the building to prepare some chicken broth for Hilda, I went up again to the Planetarium where our broadcasting set was located. I was in a brown study; my thoughts had been jerked free, sent pell-mell winging their way into the future. Hilda's last words had unlocked a new avenue for them. If Joel and I had conceived the machine which had wrecked our world, why couldn't I—but the idea was—oh, I was tired, too! I sank into the nearest chair and slept.

Strange Footprints

DURING the night, Hilda passed away. I did not know of the sad event until morning. She had slumbered on and then, without waking, had drifted into that greater, more serene sleep from which no one ever awakens. For the manner of her passing I was glad; and though we mourned her and missed her, the parting was the easiest and kindest to all.

Her last resting place was in a vault under the sub-basement of the Memorial. The other concrete cubicles about her contained talking machine records, radio tubes and other heirlooms of the recent past which had been placed there for safe keeping for some remote race to find in case all the other traces of our civilization should have failed to outlast the centuries. If, however, our own kind survived the ups and downs of the coming ages, it was my wish that Hilda's casket should be left unharmed, that fitting honors might be bestowed upon her for having been instrumental in saving our race from extinction.

When all that could be done had been done, the others filed out of the vault, leaving me alone with my loss.

I was dazed. The preceding hours had gone by somehow for me; I had done this and that but my recollections were vague. A cloud had settled about my shoulders. I was without a rudder. I felt impotent, worthless. Hilda had been the driving force: it was her un-

tiring energy and determination which had sent me and the others out hunting for other human strays; it was she who had welded us into one family, had kept hope alive and had fought any let-up in the struggle to better ourselves constantly.

My lack of initiative was noticed. Vera consoled me in vain; the others joined with her, but I would have none of it. Ottokar pulled me aside and spread Hilda's diagram for the new transmitter on my knee, but I took it from him and strode out into the broken streets. Ottokar followed me, but I soon eluded him among the city's ruins.

When I returned long after dark, Ottokar was waiting for me impatiently a short distance from the Memorial. What he had to say was apparently intended for my ears only.

"Dad, I followed you today," he began.

"Yes, I know."

"I feared you might come to harm."

I did not say anything to that.

"But," he went on, sheepishly, "I wasn't clever enough. I soon lost you. When I was sure of that, I started back across lots. The rain this morning made the going muddy in places. In one spot I slipped and fell and that's how I came to notice it. There, sharply defined, was the print of a human foot, bare, a man's!"

"But," I said, startled, "there are many footprints left in protected places since the time of the calamity. This one of yours may be an old one."

"No, it's a fresh one—and I found others!"

At that moment one of the women appeared on the portico. I dismissed the subject hastily.

"We'll look into the matter tomorrow," I said, quickly. "Keep mum about it."

AFTER dinner, feeling that I must do something, I carried a signal-testing apparatus, with Ottokar's help, to an old stone building about two miles north of the Memorial. If the signals were from the Russian, it behooved us to discover in which direction his sending apparatus lay, if for no other reason, then to fend off a possible attack. We set up an aerial and worked patiently far into the night. The Second Earth and its companion, the Moon, were down near the horizon when we packed up and returned to the Memorial.

"What do you make of it, Dad?" asked Ottokar.

"I don't know," I confessed. "The signals were no stronger, no weaker. We'll try again tomorrow." Then I recalled Hilda's words. "Mother must have been thinking of the source of these calls, too," I went on. "She seemed to doubt that they came from the Russian."

"There must be something to that," the boy replied, "because Mother worried about the radio quite a lot."

"And that reminds me, Ottokar," I said. "She had a strange fancy at the end. She hoped that the two halves of the Earth might be brought together again some day. It sounds impossible now, but then I'm getting to be an old man. I'm not as daring as I used to be. If I should drop these mortal coils, my boy, and pass away, I want you to carry on. Who knows? You might find a way!"

Thus I abandoned the idea; thus I shifted the burden to the shoulders of a younger one!

In the morning we did not investigate the footprints in the mud. Had Hilda still been there with us, the matter would not have been neglected. Her iron rule had

ceased. Routine became irksome, breakfasts were late, we procrastinated. Imperceptibly other little signs indicated the absence of a guiding spirit.

The Experimental Tubes

THAT afternoon, Ottokar and I finally loaded the testing apparatus into a car and went jolting away to the gutted remains of a tall building some four miles to the west of the first one. Here we again set up our equipment. After the evening meal we made new tests with the same mystifying results. The signals did not differ in intensity from those received at the Memorial. We had hoped to note a change. During the next few evenings, even though we carried our testing outfit as far as thirty miles from the Memorial, we could detect neither strengthening nor weakening of the signals.

"Dad," suggested Ottokar who had shown a precocious interest in Hilda's radio work, "I don't think that's a local broadcast. The signals do not come from any set around here."

"You're probably right," I agreed, awakening to the fact, "but in any event the signals should show a variation in strength."

"Suppose, though," Ottokar added, "the transmitting set was so far away that fifty, a hundred or even a thousand miles wouldn't show any variation?"

"What do you mean, boy?"

"I don't exactly know, but couldn't that be possible?"

"Yes, of course, under certain—I wonder if Hil—your mother had the same idea?"

We returned, communing with our own thoughts. At the portal we separated and as soon as I could without attracting attention, I tip-toed up to the observatory. I entered stealthily but found the slit in the huge dome open and a dark figure sitting in the seat under the instrument. He seemed part of the telescope, so concentrated was his watch. Only when I stopped under him was I discovered.

"That you, Dad?" in a small voice.

"Why, what are you doing up here, Ottokar?"

"Oh, just prospecting. Looking at the Second Earth."

"See anything new?"

"Nothing much. Same as usual."

And that was all we said, but for hours we alternated at the instrument, each probably with the same secret idea in his mind. The flat side of the Second Earth was toward us, slightly foreshortened, giving it the appearance of an irregular ellipse, its major axis at first in a vertical position and then gradually, through several nights, sliding into a horizontal line, as if the half globe with its teeming millions were moving through space with a flopping motion.

The ellipse was lit up faintly with a pale reddish light, a result either of "earth-shine" or reflected light from our half, which must have seemed "full" to Joel Murch on the Second Earth or a result of the fires that raged on that vast open wound Hilda had hoped I would close.

"Do you still think," asked Ottokar as we descended finally from the observatory, "that Dr. Murch is really up there?"

"I do, my boy," I said sleepily.

"Then, Dad," he asked, "why haven't we tried to communicate with him?"

I stopped in my tracks. Why hadn't we? "It didn't occur to us, Ottokar," I answered. "We can't, anyway."

"Those VT 66 tubes—oh, I wonder if Dr. Murch is trying to—"

"Those tubes in Baltimore," I was suddenly excited. "They're up there with him now. He knew about them. He must be using them. It's Joel calling! It must be!"

"That would explain the failure of our tests!"

We hurried back to the receiving set.

"But the code," I muttered to myself, "I don't know it!"

"It sounds familiar, though, you said?"

"Yes."

"You once told me, Dad, about a code Dr. Murch intercepted—the Russian's."

The boy was right. A half hour later we had decoded the message. It read, simply: "Joel calling. Make sign. Wavelength 5.6 kilowatts 690,000."

I was jubilant, overcome, so much so that I quaked. I was a new man. Sleep was forgotten. I paced madly up and down, paused before our transmitter and shook my fist at it impotently. I pointed to the message.

"Do you see that, Ottokar?" I asked. "690,000 kilowatts!"

"We've got more than that, Dad."

"But the set won't stand it!"

"Mother's new transmitter—"

"We're going to Schenectady tomorrow," I cried. "Perhaps we can locate those two experimental tubes."

But we did not go to Schenectady the next day. Except for ourselves, the same lack of initiative held sway over the family. Breakfast was late. Little effort was being made to get it. I liberated the women. Outside the children were at their play, still finding intense glee in being able to leap fifteen, twenty or more feet in the air. With the loss of half our globe, the gravity had changed and even the youngest performed amusing as well as amazing feats of agility. There was no harm in their play, great value, in fact; but routine had been forgotten. It was not the hour for play.

I soon had them about their rightful tasks.

Dr. Tobias Brown

THE morning was cloudy, with a promise of rain. I was reminded of the footprints Ottokar had discovered. With a sense of having frittered away precious time with probably the life of some human stray in the balance, I called Ottokar and several of the older boys and set out to find the prints. Spreading out in a fan shape we were able to pick up the trail despite long stretches of pavement and stone. Had I acted immediately upon Ottokar's discovery instead of letting the days pass, our task would have been infinitely easier. Lumbering beasts such as man had never seen except in the throes of a nightmare had mingled with more familiar creatures to trample over the ground in the meantime; but despite this, we were able to follow the almost obliterated marks and toward the close of day, after we had wandered many miles from the Memorial up through the dry bed of the Delaware and over to the New Jersey side, we expected to find our quarry at any minute.

Our search was concluded abruptly upon rounding a tumbled pile of masonry. Like a disjointed worm, a

sewer pipe line lay all about us. From one section we saw bare feet protruding while nearby were the remains of a fire and the leftovers of a sketchy meal.

The man was a human wreck; one arm was gone, the left side of his face was a hideous scarlet obviously from a burn, his clothes soiled and in tatters, his body emaciated either from loss of blood or lack of food or both, his feet bleeding from stone bruises and his manner terrified at our unheralded coming.

We took him back with us but, because of the appearance of his face, we could not coax him to join the rest of the family. We, therefore, made a berth for him in the observatory where he received such ministrations as we could render him both for his internal and external comfort. After his fear had been allayed by our kindly intentions, he thawed out and proved quite well spoken and possessed of an education out of the ordinary.

We could not understand his apparently starved condition when foodstuffs were so plentiful.

"I had not the spirit to live," he explained, "nor the courage to end it all. My past before—before this happened," waving his one arm at the destruction outside, "was a rather black one. It couldn't have been worse. . . ."

"That's past now, Mr. Brown," I hastened to assure him. "This is genesis for all of us."

He thanked me with a wry smile. "During the height of it all," he went on, weakly, "something went 'click' in my head. My outlook on life and the deeds I had done changed. I suddenly wanted to die, and not being so lucky, I crawled away, bleeding and in pain to be away from any who might be left. I did not want to contaminate other people with my presence. I saw matters differently. I was not fit. I could not atone for the past and the past was ever with me. I could not, cannot forget. I am constantly being reminded. My hair has turned gray. I'd do anything if I could atone; but life is not long enough for that!"

"Another man is quite welcome in our party," I told him, "and there is much to be done. . . . Odd," I added, my thought running in another direction, "odd, but—but there's something familiar in your voice—as if—oh, it's a fancy."

The raw scarlet of his face had gone a deadly pale color. I caught myself. Why scare the man? I rambled on to another subject.

Ottokar was at the receiver. Brown picked up the tape and studied the message as it came through.

"This Joel—it's not the famous Dr. Murch, is it?" he asked and then bit his lip for his unguarded question.

I swung upon him.

"Yes, it is," I replied, harshly. "But how do you come to be able to read that code?"

His one arm came up before his face defensively.

"Don't!" he groaned. "That's part of my black past." He trembled, then calmed down while I waited. "My name's not Brown," he confessed, "but still, remember me by that name. I'm a Ph.D., and all that, though I suppose you've surmised that already. I . . ." he hesitated, then went on more rapidly, "I fell in with a foreigner who had even more learning than I. Unwittingly at first, then because I was already in and being well paid, I helped him in nefarious schemes and sometimes produced results for him in the dark, not knowing their ultimate purpose. For the last months

I worked on queer problems for him, that code, for instance but without the slightest inkling of what he was trying to get at. I suspected, I knew that he was crooked, but I was lulled into continuing. Perhaps it was an hypnotic spell, perhaps there was something wrong with me mentally."

"Was his name Grubsnig?"

"Yes, though he went under other names, too."

"Is he alive?"

"I don't think so. He must have been killed in his autogyro. I found the wreckage. I was looking for him to—to kill him! . . . He often warned me about this Dr. Murch: considered him the most dangerous enemy to his secret plans. . . . I'll be glad to meet Dr. Murch, sir."

"Meet Dr. Murch, Dr. Brown?" I exclaimed, taking to him despite his former history. "Do you know where Dr. Murch is?" I led him to the telescope. "Look through there. We call that the Second Earth. It's the other half of our terrestrial globe. Joel Murch is somewhere up there!"

"Oh! But—but you mean he is sending messages through space from up there?"

"Obviously."

"Wonderful! Then he must have some of the VT 66 tubes! . . . Yes, I'm acquainted with the tubes. At Grubsnig's request I—I stole the idea from the inventor! Have these tubes worked in your transmitter yet?"

"We don't have the tubes and our transmitter is inadequate. We haven't been able to reach Dr. Murch yet."

"Have you sufficient power?"

"I think so. We had the set hooked up to one of the Metal Worms but the tubes went out."

Brown became intensely wrought up. A happy light spread over his scarred face.

"Then I can be of help, after all!" he cried. "We'll get the VT 66!"

"Do you know where they are?"

"In Schenectady? Yes . . . I know the very cabinet they're in—that is, if they haven't been destroyed. Have you got a plane, an autogyro?"

"There's one back of the Memorial. We've warmed up the engine often but never having piloted one before—"

"Easy," he broke in. "Instinctive. I'm a pilot, anyway. Come along. Show me where it is."

"What?" I exclaimed. "Going now? In the night?"

"Certainly."

"But can you stand it? You look ready to collapse."

"If I do, you'll be with me. I don't matter."

"But," I temporized, "I planned to go in the morning in a truck or car."

"Impractical. Would take you weeks. You might never make it. Roads are—well, look outside at those streets!"

I conceded his point. "Here, Ottokar," I said, turning to my boy and thumping him on the back, "get the sleep out of your eyes. Wake a couple of the boys. Fuel and oil the Jay Bird. Check her over and warm up the engines." I faced our visitor again. "No use, Brown, going out yet. Save your strength. Ottokar will summon us when the ship's ready. By the way, look at this. What do you think of it?" and I handed him Hilda's pen sketch for a transmitter.

Brown studied the layout carefully. It was a very rough but pertinent drawing. Brown nodded his head several times and here and there interjected comments. On the whole he was highly pleased with the diagram. Brown took another sheet of paper and while I held it for him, he redrew Hilda's effort, making various changes, changes which seemed trivial to me; but then, electricity has always been and always will be a profound mystery to me.

"Her ideas are good," he commented, when he had finished, "but there are some kinks I conceived which it would be better to try first."

I had confidence in Hilda's ability and felt inclined to voice such an opinion but I refrained. Argument was not progress and now I was fired to get things done. How I bewailed the idle years since the catastrophe during which I had done nothing to get in touch with Joel. In fact, I had sat back waiting for him to signal me! Night after night, while Hilda was at the radio trying to find people on our own bit of the Earth, my family and I would sit on the broad steps of the Memorial, brooding over our fates, reeking with pessimism and watching the Second Earth for a sign! I said as much to Brown but he shook his head and disagreed with me.

"You were doing exactly the right thing under the circumstances," he said. "You brought together such remnants of the race as you could find, you sheltered and protected them, you married and multiplied. Perhaps from your family will spring the future races of this half of the Earth. Who can tell?"

Ottokar's entrance interrupted our conversation. We could hear the droning of the motors outside. The Jay Bird was ready. Ottokar wanted to go with us; but being still urged by that new vim, desire, within me to produce results, I drew him to one side, gave him Brown's sketch and suggested that he get busy by tearing down such parts of the old transmitter as would be rendered obsolete by the new scheme. His face brightened up at this chance to be useful.

"May I go ahead and rig up the new one while you're gone, Dad?"

I laughed. "How long do you expect us to be away?" I asked. "However, go ahead if you think you can do it."

S. O. S.

IT was amazing what the younger generation could do! Their minds worked nimbly with involved equations, their lips dribbled complicated scientific jargon that even I, a chemist with sundry letters after my name, found confusing. We discussed this phase of youth as the Jay Bird soared away through the night toward Schenectady.

"It's ever been that way," Brown commented. "The younger seem to know more than the older. Oftentimes they do."

The Jay Bird was flying high above the ground. The flexible windmill blades over our heads were rotating about 120 times per minute but their motion seemed slow and the whole superstructure gave the Jay Bird a sluggish, unwieldy, unairworthy appearance. Its speed, however, belied this for we were doing more than 550 miles per hour, at times even more than 600! The Jay Bird was the fastest plane of this type ever built. It

had been given a place in the Memorial as a museum piece after it had flown the equator around the Earth in a dawn to dusk flight.

At Schenectady we found the experimental laboratory a shapeless mountain of masonry, concrete and twisted steel. A fissure in the ground had cleaved the huge edifice in half. We did not return to Philadelphia for four days. Under the directions of my one armed companion I sweated and labored with such tools as I could find in the vicinity making an excavation into the ruins in search of the vacuum tubes we hoped were still there and intact. When I thought that my back would at last break under the strain, and when doubts began to assail me as to whether Brown really knew the location of the tubes, we uncovered a steel cabinet upon which were certain cabalistic numbers. The cabinet proved to be the correct one and contained the prized tubes.

Twenty-five minutes later we were hovering over Logan Square in Philadelphia. Ottokar and Vera met us as we dipped down to the Memorial. Ottokar, I noticed, was haggard, his face unwashed, his whole appearance one of infinite fatigue.

"The tubes?" he called. "Got them?"

At an affirmative from us, he clambered drunkenly into the cabin and clawed at our cabinet.

"Help him, Bob," Vera called. "He said he wouldn't rest until the set was operating and he's hardly able to stand now."

"Is the transmitter finished?"

"Yes," and in a lower key as I approached and greeted her, "he's worried, Bob. The signals are not coming in regularly. Joel seems in trouble. The last message was a plain S O S repeated over and over again followed by a long silence, then the word 'Farewell!' He—"

But I did not wait. My stentorian voice rang out. My boys seized hold of the cabinet and carried it up into the transmitting room in short order. I tore my shirt open at the throat, gulped some water and fell to work with Brown and Ottokar.

But I was getting on in years. My mind could not master my tired body. Twelve hours that day with a pick, shovel and crowbar finally produced their effect. While my companions were fitting in one of the mammoth tubes, I extracted another from the cabinet and started for the transmitter. The two were not quite ready for it; I lowered myself gingerly into a convenient seat, holding tenderly the odd, pumpkin-like glass tube in my lap. No use standing, I reflected, and with that my thoughts drifted away as gently and as aimlessly as a canoe drifting at dusk down a stream.

In Syzygy

IT was soothing to think. One had to do that on rare occasions, especially when one's best friend seemed besieged by dire peril. Yes, clear thinking was required. Now this danger by which Joel was surrounded—what could it be? He, Bob, had always considered Joel safe. One could hardly be otherwise with millions of companions up there on the Second Earth! And yet there was danger! Perhaps plague, due to crowded conditions, had swept over the face of the Second Earth? Perhaps the human race up there was undergoing extinction in a general holocaust of

rampant disease. Then another thought: the Moon was 238,840 miles distant or used to be from the spot where he, Bob, was holding the wonder tube while the Second Earth, as near as he had been able to figure, was 50,000 miles beyond the Moon at this time. Now how was that—did the Moon revolve in an orbit about the Second Earth or did the Second Earth revolve about the Moon or did they both revolve around him, Bob, and his bit of the old Earth or did he revolve about—but it was too complicated! Anyway, it was obvious that Joel and the rest of them up there would sometimes see the other side of the Moon, which no human had ever seen before, that the Moon would appear at least five times as large in Joel's heavens as it did here, that to an observer many highly important details on the Moon would be revealed by this immediate proximity and—but—what a thought!—perhaps that offside of the Moon was inhabited with a teeming population! There might be atmosphere on the other side of the Moon, perhaps only in hollows and deep cavities, but still atmosphere; and furthermore, no astronomer had ever proved that ice and snow did not exist on that luminary—not liquid water, of course, but ice and snow! A dreadful thought! The Moon people might be inimical, positively threatening to their new neighbors. At this moment Moon space-ships were probably bridging the gap between the two bodies and their crew dismantling Joel's radio and slaughtering the humans with strange, devilish weapons. Absolutely, if people existed on the surface of the Moon, or in the Moon's interior for that matter, they must by the very poverty of their environment be a more highly developed race! Of course! Certainly!

H'm, what could he, Bob, do about it? Suppose the VT 66 tubes were successful, suppose he could talk across the ether with Joel, of what use would that be to Joel? No use whatsoever! Then what could he do about it all? Why all this haste with the transmitter?

I was pleasantly unexcited and coldly rational. All sorts of solutions swam before my mind's eye. These I inspected impartially as I would the neckties a counter clerk in department store passes before one; and then, suddenly, quite against my will, I was stirred, excited. A giant form reared itself beside me and over me, loomed upward higher and higher until its outline became nebulous and the vast shape blotted out the twinkling stars in the zenith of our planetarium. I quavered and quaked for I recognized the form. It was Hilda's!

With fingers already too bony and gaunt for this world she was pointing out toward the Second Earth. Her index finger trembled a little as if with passion but her words were slow, measured, like the beat of an illimitable ocean upon an unprotected beach.

"When we're in syzygy," her cold lips said. "Don't forget, Bob, when we're in syzygy!"

I started to smile even as I shivered.

"When we're in syzygy," she went on relentlessly, "you must mend the Earth, you must bring the parts together!"

I roared with laughter at the impossibility of it. But my laughter sounded out of place. I rubbed my eyes. The towering shape of my visitant was melting down, was diminishing. . . . The sun was in my eyes. Why, it was not Hilda after all, it was Brown with his stump arm waving tiny circles above my head.

"What an idea!" proclaimed Brown. "To mend the Earth, to bring its parts together!"

"What—where—?" I began.

"You've been asleep for hours and hours!"

"Oh!" I closed my eyes and searched for a word from out of my dream. It was like dipping into a crystal clear lake for an object at the bottom only to find when one sank one's arm down into the water that the pellucid transparency had vanished and the object at the bottom had become elusive, its shape ever changing with the ripples. However, I seized hold and brought it out into the light of day.

"Ssyzygy!" I murmured, finally. "Brown, what in the world does the word 'syzygy' mean?" and I waited to see him laugh.

"Syzygy? Why syzygy," he replied, "is an astronomical term. When the Sun, Moon and Earth are in line, we say they are in syzygy. In conjunction, you know. But what was the joke? A little humor wouldn't be amiss to improve the general spirits around here. There's Ottokar just coming to. You woke him. As for me, I feel—well, let's have it. You were laughing at syzygy, were you?"

"No. At the notion of bringing the two halves of the Earth together"; and I told him about my dream.

"If you cut an apple in half," replied Brown, soberly, "you can always bring the halves together, can't you?"

"Yes, but the case isn't the same."

"Why not? Perhaps in the coming ages, someone will discover a way to reverse the process and bring the terrestrial fragments together. Really not at all funny, after all," he finished.

"No, I suppose not," I answered, now fully awake. "Hilda—why Hilda on her death bed and Hilda in my dream—they both said the same thing!" Thinking suddenly of the V T 66 tubes, I plied Brown with questions.

"The tubes were just what we needed," he replied. "Ottokar had the transmitter completely rigged up and wired, though where he got some of the new parts is a mystery. I haven't had the chance to ask him yet. The transmitter works perfectly with the stepped-down voltage from the Metal Worm."

"Yes, yes," I returned, impatiently, "but what about Joel? Did he receive your message? Has he answered? What danger is he threatened with? What—?"

"We don't know," he answered. "There isn't any doubt about our calls having penetrated interplanetary space; we've been using over a million kilowatts; but there is no answer. Dr. Murch's set has been silent ever since that S O-S call, so Ottokar tells me. It's foolish to jump to mad conclusions, but it's equally inane not to face facts. Dr. Murch's radio must have been damaged or he himself—well, he may even be beyond all human help!" At a suggestion from Ottokar, who had joined us, he went on:—"While studying the Second Earth with the big telescope during your nap, we detected, first almost imperceptibly, then more clearly, a slight discoloration on the flat side. Its hue was rust-like. This patch of color is spreading gradually. It's now about three to four centimeters in diameter and still increasing in area, though the increase is slowing down and can be measured with the instruments only."

New Hopes

FOllowing this conversation, we lived through a very ineffectual week. The futility of it was maddening. I pictured the best friend I had ever

had sorely imperilled, perhaps already beyond our aid and here we were eating three meals a day, or at least trying to, and sitting about in comparative comfort waiting for events to transpire. I had an impulse to do something rash, anything, to change the monotony of doing nothing. Think as I might, until my head ached and my temper became as brittle as glass, I could conceive of no way to help Joel.

At Dr. Brown's suggestion we had established watches at the large telescope for the constant observation of the Second Earth's discoloration. By the middle of the week, our anxiety on that particular point was allayed by the complete disappearance of the rust spot. We could establish no cause for the phenomenal occurrence, but with its going we thought no more of it for the time being.

Though there was no task to occupy us other than the radio and the telescope, I found that, as the week wore on, I saw less and less of Dr. Brown and incidentally of Ottokar. Dr. Brown, quite unlike me, exhibited an increasing flow of good spirits, the old haunted look of fear had vanished from his eyes, he seemed to grow happier, to swell out with a joy that could not be confined and for which I could make no accounting. One day he seemed to become almost frivolous.

"Bob," he asked, nudging me with the stump of his arm, "have you had any more dreams about patching up the Earth?"

I grunted a negative.

"Well, don't lose faith in your dreams!" and he trotted off, chuckling.

On another occasion, we met abruptly on the stone staircase and under the impact we both went down.

"I was just hurrying down to see you," he explained, after catching his breath.

"So it would seem," I retorted, sourly.

"No offense, no offense. Do me a kindness, will you? What do you know about rocket propelled planes? What men were associated with the idea? Where can I find their theories and their working equations?"

I smiled, somewhat belittlingly, I admit. The man was thinking of a rocket ship to the Second Earth! On second thought, though, there might be something in the idea. There were not so very many of us here, but what we might be able to transport ourselves across space to Joel.

"The latest ship built," I recited from the vague memory of my newspaper reading, "was built amid the heat and sage brush about Roswell, New Mexico, by a Canadian-American aeronautic engineer whose name was Fritz, I think. It had a take-off speed of ninety miles, a landing speed of thirty miles and carried a useful or pay load of some 400 pounds. It was a twenty-four rocket tube affair and had a high ceiling, as figured from the readings of the instruments on board, of over 110 miles, the highest any aircraft has ever penetrated into space. The ship was found, almost unharmed, about 320 miles beyond the takeoff point and, the chronometer, which had stopped apparently coincidentally with the landing, indicated that the elapsed time was exactly twenty minutes! That would make, roughly, a thousand miles an hour! The pilot was never found. The theory was that he must have fallen out *en route*.

"There were several other men before Fritz's time who spent the major portion of their lives tinkering with rocket propulsion; one in Germany made both a

land vehicle and one for the air; he wisely put the first on railroad tracks and used a cat as a passenger. His patents, when on the eve of fruition, were bought out by a big American motor concern and since then nothing much has ever been heard about them. Another, a university man in New England, commenced by sending up rockets for weather observation for many years. Later he built a larger model to carry human beings but a timid government stepped in on the grounds of needless danger to life and the cost which it entailed and now the ships are mere show pieces in some Boston museum. But these men had not gone as far as Fritz, whose ship, by the way, was being brought east to be housed here permanently about the time of the upheaval. The complete monograph on his work is here in the Memorial somewhere, for I saw it not so long ago."

When he was gone, I spoke to Ottokar, who had materialized during the latter part of the conversation.

"Did Mr. Brown ever tell you how he lost his arm?"

"Why, yes, Dad: an iron girder fell across his body. He's got lots of backbone," admiringly. "I like him a great deal. He has something wrong in his chest. He screws up his face in pain suddenly and tries to stop breathing while the pain lasts; but he never complains."

I had noticed the same symptoms myself but Toby Brown, whom I had grown to like myself, had avoided my questioning.

"You're with him much lately, Ottokar," I said.
"What are you doing?"

"Dr. Brown is teaching me how to work out some astronomical problems."

"And what is Dr. Brown doing besides that?"

"I don't know. Calculations mostly in which I help him with the slide rule. I tack the papers down for him, for he seems helpless just with one hand. When the answers do not suit him he swears grandly in some foreign language and then starts over again. Once I asked him why he didn't ask your help. He said he wanted to be sure before he said anything—afraid you'd laugh at him."

"I suspect," I returned, "that he's wasting his time on rocket space ships. Even if he could devise one theoretically capable of taking us out into space and up to the Second Earth, how could we ever build it? Neither he nor I know anything about the crafts."

"That's true. We'd have to have mechanics and workmen of all kinds . . . Dr. Brown is estimating forces to move matter at velocities of a hundred thousand miles an hour. Could the human body stand such high speeds? Could I shoot through space, say, at five thousand?"

"I suppose so. You're traveling almost that fast now! Astronomers tell us the Earth used to revolve about the sun with an orbital velocity of over 66,000 miles an hour. You were a speck on the Earth and raced along with it and it bothered you so little that you went on living without even knowing of your mad flight. The human body can stand any speed providing it is regular, does not fluctuate too greatly."

"What about airplane pilots who lose consciousness during the air races?"

"I was going to tell you about that. Speed doesn't matter, but the rate of increase of the speed, the acceleration, is what matters and very seriously. High speeds must be reached by easy stages, giving the human body a chance to adjust itself to the changes."

I questioned Ottokar further but without gleaning any definite inkling of Toby Brown's objective. I doubted whether Toby himself knew. Despite this, I went about the consummation of my tasks, such as they were, with a lighter heart and more buoyant step: someone was striving toward some end and not sitting by helplessly as I was, and even though I was more than dubious about both the end and the method of approach to its solution, I felt keyed up in spirits. This secret concentration meant there was something in the air, an inspiration which signified new hope. Toby had stumbled upon an idea. It was unusual. He was afraid that it might occasion ridicule. There must be a seed, a promise behind it all! I actually began to whistle!

Toby's Space Ship

WE were all still seated about the dinner table one evening, all but Toby, who rarely joined us because of the intimidating appearance of his scarred face, when we were suddenly lifted from our seats by hoped-for-sounds from the planetarium. Chairs were knocked over, someone stepped on the cat's tail, a platter crashed to the floor and we stumbled into one another's way as we dashed for the staircase. As on one other memorable occasion, however, I stopped the rush and mounted the steps with Ottokar, being overtaken by Tobey, who came from another part of the building. The family came after us.

We bellowed some meaningless words at each other, waiting for no answer. Joel was still among the living! The radio indicated that. At last Joel had heard our signals!

I turned on the amplifiers to dispense with the earphones. We all wanted to hear. Even the children. They were grouped in a restless wave about twenty feet away. The women were curbing their excitement.

The receiver was very much alive. Our ears were assailed by unearthly, creepy sounds. Toby dialed frantically to clear up the reception. The sounds became discordant. Impatiently I took a hand at the dials.

Then, suddenly, a voice inundated that vast chamber. Though awaiting it, we recoiled involuntarily.

"Hello, Bob!" it shouted.

It was a well-remembered, a well-loved voice. Old Joel was talking to me! He was alive! I could not mistake that voice. Oh, how happy I was! No doubt of his well-being! We capered about the receiver. We cheered, we acted in a manner that would have won us ready admission to any asylum! Interplanetary communication was an accomplished fact! We were speaking across space! I was glad that Joel should be a joint party to an event of such stupendous import! We had to save ourselves somehow now; we had to get together, Joel and I, and the rest of humanity, to enjoy this new power at our disposal.

We sobered down in time, thought less wildly. Toby Brown stepped aside in deference to my long friendship with Joel.

"Go ahead, Bob," he urged. "Speak into the microphone."

I slipped into the seat he pushed forward for me and sent out my greetings. In my wrought-up condition, I plied my distant chum with question upon question with almost machine-gun rapidity until realizing what I was doing, I broke off and started again.

"Tell me about yourself, Joel," I finished. "We've waited a long time to hear."

I mopped my forehead and loosened my shirt front. Again came the eerie sounds, like the dying anguish of lost souls. We dialed again and again, but succeeded only in adding the terrific roar of static to the other disturbances.

We continued our efforts through the entire night, standing vigil over the obstreperous set but without result. One by one, tired and disappointed, we dropped off for a snatch of sleep.

During the day the receiver was silent. The thrill of the night's experience had upset all routine; the hour of the first meal passed without notice; the children chattered, the women were fretful and nervous while we, Toby, Ottokar and I, talked quietly and conjectured all sorts of reasons for the set's failure. We decided upon an overhaul, dissected our entire equipment, checked each part and assembled the whole in readiness for the evening.

"It was a prophetic glimpse of the future on Hilda's part, absolutely prophetic," I affirmed later. "She visioned us talking to Joel!"

"Who are we," Toby retorted, irreverently, "to say whether it is possible to foresee or not?" His eyes twinkled. "Truths are sometimes decked out in strange garments. The time may come, Bob, when even the flitting fancies of one's slumbers may have their own peculiar meanings for you!"

His face suddenly twitched with pain, beads of perspiration appeared on his forehead, his hand hovered over his chest.

"What is it, Toby?" I cried, dismissing a caustic rejoinder that was on the tip of my tongue. Flecks of red appeared at the corners of his lips as I spoke. "Toby, you're sick," I cried again. "Blood! Where—?"

He had pulled out his handkerchief which he now held to his mouth. A pink stain discolored the linen.

"It will be over in a minute, Bob," he said. "The pain is gone now and—this other, that will stop, too."

He sat down while I leaned over him but he waved me aside and seemed to resume his bantering air, but I could see that the effort fell short of its aim.

"A wall collapsed, pinning me under the debris during the—the—" He gulped and went on: "When I came to, I had only one arm and a piece of steel lay across my chest. Ever since then I've had an occasional lung hemorrhage and at times pains like the jabbing of a knife into one. Breathing is difficult then. It'll pass off in time. If it doesn't—" and he shrugged his shoulders negligently.

"Such talk won't do!" I protested. "Not in our state, Toby."

"What does it matter?" he responded. "I wanted to pass out awhile ago, anyway. It was only your kindness that made it worth while lingering on."

"Bosh and tommyrot!" I exclaimed. "Where would we be if we all felt that way? You have been derelict in the care of your condition." I seized a scrap of paper. "Here," I commanded, "take this. It's a ferrous salt solution which you can easily find over in the old medical center of town. No, Ottokar can get it for you in the morning. The solution will tend to stop the flow of the blood. You should be resting, flat on your back, only your head up to prevent regurgitation. You have been bending over your figures too much."

"Ah, yes, Bob, that figuring. It's time I said something. One never knows. It may be too late later."

Exasperation incited me to a sharp remark, but again it was dismissed with a wave of his hand.

"I've looked over this man's equations, Bob," he said. "I mean Fritz's. I've checked and rechecked every statement and every answer and with a few exceptions, I find that he was right. The few exceptions, which you will see yourself when you compare our calculations, were probably the causes of his disappearance. My conclusion is that a rocket ship to pierce the cosmic spaces, to travel a set course to a definite destination is not only in the realm of possibility, but will become an actual reality! In other words, Bob, I am seriously planning to shoot ourselves and our possessions straight up from the Earth and land us in the midst of our kin and friends on the Second Earth."

I approached him, sincerely afraid. I touched him on the shoulder.

"Toby," I pleaded, "don't you think you had better lie down?"

He ignored my words.

"Bob," he replied, "it may be our loss that you didn't find me before your Hilda passed on. She must have had an idea; her will-power fought to the last, even beyond death, to communicate it to you."

"Then why didn't she tell me outright sooner?"

"Apathy on your part, Bob. She was a reasoning woman or she would never have been head of Temple University. You had to be pushed, you were impassive, indifferent. I know because I was that way when you found me."

There was no rebuttal to be made. Toby Brown had gauged the situation correctly. I had been frank enough to admit to myself that Hilda had been the fountain-head and the leader. Since Toby was now determined to talk, I became equally determined to listen and to quiz him on how he expected to bring about this space trip of his.

"Listen, Toby," I said, "to get back to the subject: you hope to build a rocket space ship in which to carry us to Joel Murch. Am I right?"

"I expect to use what one might term a rocket space ship for that purpose, yes."

"How large will it be? What will be its passenger capacity?"

"It will carry us all and any others who may appear, together with all our belongings!"

"In one trip?"

"Yes, it will carry millions if we should have that many to carry!"

"But what about food?"

"We'll carry farms and cattle herds and so on with us!"

"And air to breathe?"

"We'll take our atmosphere with us, too."

I fell back a step. The man was insane! A space ship to hold millions of passengers! To carry growing crops and grazing animals and an atmosphere! Out of his mind, completely out of his mind! Poor Toby! I dropped my caviling attitude. One must not irritate a man in Toby Brown's state. Later I would give him a sedative. In the meantime I would offer only such minor objections to his ideas that should soothe any suspicion and lend sincerity to my play acting.

"But, Toby," I said in a different tone, leaning forward, "how will you build this ship? Where will you

get the—why, we have no laborers or skilled mechanics! There are only you and I and Ottokar and we know nothing, we're helpless as babes in the woods when it comes to building something, especially from raw material!"

"If it were necessary to build it, Bob, your statements would be conclusive arguments against it; but my ship does not need to be built! It is ready to hand, complete, or almost so!"

The conviction that his mind had gone astray grew with every word he uttered. My eyes avoided his; I did not want him to read in them how I felt, or what I was thinking then.

"But, Toby, that's too wonderful to be true," I said. "Of what is your ship made and where is it?"

Toby Brown searched my face for a long time, then shrugged his shoulders.

"It's within reach of your hand, Bob," he finally answered. "You can touch it if you wish without moving; and as to its composition, it's made up of rock, earth, water, air, clouds, anything, everything!" and with a sigh he rose and made his way from the planetarium and did not return to it for many hours.

His condition was appalling! Very quietly I went about and told the members of my household the sad tidings; I asked each and every member to exercise the utmost care with the sick man, to be especially vigilant about arousing him in any way. Having completed my errand of mercy, as I thought, I had recourse to our store of medicines, searching for a narcotic for use in case of violence.

Here Ottokar, who had been absent during the whole incident, burst in upon me like a veritable cyclone, bent on fury.

"What is this I hear, Dad, about Dr. Brown being insane?" he panted. "Is it true that you started the story?"

"Why, yes, my lad. His plight is most pitiable."

"But," excitedly, "Dr. Brown isn't crazy! He is as sane as you and I!"

I smiled, forgiving the boy's rude entrance and his apparent disbelief.

"You must be calm, Ottokar," I warned. "You must say or do nothing to upset Dr. Brown. He is suffering from hallucination. Accept everything he says as gospel truth. He will tell you he has a rocket space ship that will transport a whole city's population through interplanetary space, that it's right here, right around you, that you can touch it, that—"

"But," the boy cried, "it is here, you can touch it. You are sitting on it right now, and it will carry billions of people if necessary! It will do everything, he says it will, when he's finished with it. And he is bound to finish with his calculations soon."

I was aghast. What new turn of events was this? Was Ottokar, too, gone insane? I seized both his arms and held him tightly.

"Now collect your thoughts," I said, quietly. "You say Dr. Brown has this space ship to—to carry—?"

"Yes, Dad," he interrupted, eagerly. "I've been working with him, checking his figures. It's all right, Dad. You look tired. Lie down a bit. Don't worry. He feels hurt because you think he's out of his mind."

My arms dropped to my sides. I looked at the boy dully. Either he, too, was deranged or it was I who was suffering the mental relapse!

More About the Space Ship

O TTOKAR left me to my thoughts. Thus I was alone with the radio that evening. Neither he nor Toby put in an appearance during the hours that I talked with Joel, for talk I did. Our set seemed rejuvenated; its performance was as perfect as could be desired.

Joel was reticent. I was surprised and hurt by this sudden lack of spontaneity. At times, though, he became more loquacious, freer, in fits and starts and it dawned upon me that he was laboring under peculiar conditions which did not permit lengthy speech. I had to be satisfied with the mere knowledge that he was as well as could be expected after the intervening years. He listened to me and questioned me but as to facts about the life about him or what he was doing, there was nothing said. I told him how we were situated, about Hilda's death and the coming of Toby Brown into our midst, but nothing of the latter's illness nor of his wild fancies. I expressed a hope that some day we would get into closer touch, but he demurred.

"We're getting old now, Bob," he said. "Don't waste your efforts on that. We can sit back and be content with living it all over again in an arm chair, with our eyes closed. Those were the halcyon days, Bob. I often sit here, you old walrus, and think of you and your stinkin' concoctions."

We chatted further in this fashion, but as nothing pertinent to this story was said, I am leaving out the detailed report of our conversation, as this tale of mine is now rapidly approaching the period of its writing. It was exactly two months yesterday that Joel and I talked in this way. Events will soon tread upon one another's heels in such rapidity that I very much fear the tale will have to suffer or wait upon another opportunity—if such will ever be mine!

The conversation with Joel had plunged me into a wild yearning to be with my friend. I was disconsolate. I pictured the wonders we could bring about, he, Brown and I; for now I included Brown in any future ventures we might conceive. Inaction preyed upon me. It was past the middle of the night but seeing a light still burning in the little room that Toby had converted into his sanctum sanctorum, I strode in, probably unannounced, for both he and Ottokar were startled at my sudden and distract appearance. There were papers on the window sill, papers on the table, the desk, the floor. My feet rustled heedlessly through them. I had to talk to someone and for the minute I forgot Toby's madness.

"I've been in touch with Joel," I announced and rehearsed rapidly what my friend had said. "He seemed downcast," I ended. "Danger must still threaten him, but he wouldn't divulge its nature."

"Did you ask him about the recent discoloration?"

"No, Toby, like an old fool, I forgot; but tomorrow night we'll get or try to get answers to the questions that have been bothering us." I paused to pace the length of the small room. "He's been sending out messages for over nine years!" I burst out. "Can't we do something toward getting us together again? I'd like to have—why couldn't we take Fritz's space ship if we can find it, make alterations and one of us hazard a journey out to Joel?"

Toby Brown swept the table before him clear of papers.

"Sit down here, Bob," he ordered. "You think I'm mad. Oh, yes, Ottokar has told me what you did and I could perceive a change myself, even the children were awed and unnatural. Let's assume I am mad. What do you say? Will you listen to my arguments? They'll take but a few minutes. Scientific details—we'll forego them till later."

Sliding into the proffered seat, I closed my eyes against the light and waited.

"I admit, Bob," he began, "that the remarks I made about the proposed space ship were startling; but I did want to surprise you and thus take your thoughts from my lung trouble. Had I marshalled the facts first and then made my deductions, I wouldn't have seen that other expression on your face. You might have disagreed but you certainly wouldn't have considered me no longer master of my mind. . . .

"Briefly the conditions are these:—We're astride a large fragment of terrestrial matter whose mass is some three thousand millions of millions of millions of tons, that is, the figure three with twenty-one ciphers, or 3×10^{21} . After the catastrophe our piece, like its companion half out there, lapsed into a new orbit about the sun. We don't know the new orbital velocity yet, though I'll have that figured out before morning; but we do know that before the division of our globe it was 18.5 miles per second. We also know that the planets and other astronomical bodies are held in their places by the laws of gravity; they cannot alter their disposition in the celestial sphere, except by the introduction of some new external force or the collision of free bodies whose orbits, being tremendous and parabolic probably have at last crossed. The wrecking, thus, of two bodies might disarrange the fine balance existing among the members of the solar system.

"Let's suppose this inkwell is the sun and this shoe button our slice of the Earth and furthermore, let's assume the attraction that holds the button in its proper relation to the inkwell is one pound of pull exactly. Now I reach forward and give the button a push, let's say of two pounds. Will the button ever return to its original orbit about the inkwell, especially if I continue applying the two-pound force? You answer no and you are right. Some would say that a body could never leave its orbit without suffering destruction, but that is only a theory and I don't subscribe to its tenability.

"Now let's talk about the sun and the terrestrial fragment upon which we are. If I can exert a force greater than the one which holds us in our place, it's obvious we'll have pushed ourselves out of the regular orbit into a new one."

"Hold on a minute," I interposed, opening my eyes. "This all presupposes an external force, a force from without the planet. Where are you going to hang your hat temporarily while applying this force—Mercury, Mars, or where?"

"I'm going to stay right here on *terra firma*," returned Toby. "Instead of using your pushing force idea, I'll use the recoil or rocket principle! In other words, our piece of the Earth, all of it, with its inhabitants and its mountains and valleys will become a rocket space ship!"

"A beautiful dream!" I retorted lightly.

"Wait," he entreated. "When a novice fires a rifle, what happens. There's a sharp recoil. That is just the sort of recoil I intend to use."

"Delightful in theory," I answered, "but what about

the magnified rifle with which we are to get this recoil?" Ottokar here turned to me jubilantly.

"The Metal Worms, Dad!" he answered for Toby. "Didn't you dig 200-foot diameter subways with them at the rate of a mile or so a day?"

"Ah, yes; but the Metal Worms, wherever they are in the bowels of the Earth, cannot be tampered with," I returned, "not without the special heat suit and that was lost when—"

"That suit, Bob," from Toby, "is safe in Grubsnig's laboratory! But the problem is not as simple as that."

"No," I agreed, smiling. "Discharging the Metal Worms in the manner you plan would ignite the atmosphere, cause a spreading destruction of that vital concomitant of human life. The free disintegration of one atom would set off others and so on indefinitely, spreading not only to the atmosphere but to our whole Earth, the distant planets, in fact, the entire solar family in time just as gunpowder spreads in a flash. . . . And then I don't think the joint recoil of all six Metal Worms or atomic machines would be sufficient."

"You're right again, Bob. These calculations," indicating the scattered sheets, "prove the insufficiency of the recoil from the source you mention, but then—well, I anticipate other sources for my rocket power in addition to Dr. Murch's atomic machines. As to the universal destruction likely to result, that is the question with which I am fretting now. However, let's suppose we have written Q.E.D. to these problems. What next?"

"What is the object in jolting our Earthly fragment from its orbit?" I asked.

Toby found another button, placed it on the table and flipped the first one against it.

"To bring the two halves of the Earth together!" he said. "Thus!"

"Assuming our fragment shoots off at the proper tangent! How will you guide it?"

"I won't," he answered, smiling. "I'll shoot my atomic charges off from the side of our Earth which is away from Joel's piece and since the action will be so rapid under the tremendous, incalculable force of the bursting atoms—why, we'll go straight as an arrow to our destination!"

"Fine," I laughed, "and who will be left to collect the pieces? And what will prevent you from plastering us across the face of Venus or Mars or even, if your aim is wrong or not timed right, from pushing us rudely into the sun?"

"Well put, Bob," Toby was evidently enjoying himself. "As to crashing into the Second Earth and destroying it and ourselves as well, we can erect atomic machines on the side facing the Second Earth, right here, let's say, and use their recoil as a braking force just as Fritz and the others employed the same methods in effecting safe landings. As to that other peril of making a ninety-two million-mile plunge into the sun. I have left one more expedient, although, in such an event, I'm afraid it would save the Earth without saving us. Do you remember the word 'syzygy'?" and he chuckled. "We can time our start when we're in syzygy, when the Sun, Moon, the Second Earth and we are in a straight line. Should our recoil be so great as to carry us against the Second Earth and beyond, despite our braking action, then we can glide on until we strike the Moon. That luminary will surely stop us from riding into the sun, though there won't be anyone living by then to care?"

"Why, Toby," I said, "that's using Hilda's idea!"

"Of course," Toby agreed. The happy light was in his weary eyes again. He perceived that this time my interest was genuine.

"I still don't see," I added, lamely, "where and how you'll get the terrific power needed."

"Have you been over to your old laboratory since the Separation?" he asked, irrelevently.

"Come to think of it, no," I answered, surprised.

"How about going over in the morning and also to Grubsnig's place? We can work with definite facts then."

"At dawn tomorrow," I assented and was turning away, rejoicing to myself that here at last we were to have action when one final question occurred to me.

"If," I said, "those atomic machines produce the recoil you expect, Toby, the shock will be terrific. Will this old hunk of terrestrial matter stand it?"

"Didn't Fritz's space car survive the combined recoil of twenty-four tubes? Of course, some disturbance will result, especially if too great a recoil is used at first."

We separated for what was left of the night, looking forward to the morrow with more impatience than I had for many a year.

Taking Stock

THAT was two months ago yesterday when we parted with such high intentions, but those months have seemed truly but weeks. Work is a grand panacea for the human mind, when it suffers from monotony and unquenched desires. Toby Brown supplied the work and here I am today—but I must go on with the tale.

The following morning, just as the jet black veil of the night had descended upon the world of the Precipice and a pale smoky sun had impaled ours with its weak rays, Toby Brown and I took our seats in the Jay Bird while most of my household gathered about in a circle around the ship.

"Isn't there anything, Toby," I questioned, still obsessed by the desire for action, "which Ottokar and the other boys could do in our absence?"

Toby started a negative reply, then broke off and considered.

"It should have been done before, anyway," he ruminated almost to himself. "Why, yes, Bob," he continued, "Ottokar and the boys could assemble all the available trucks in the vicinity which are still in working order. They could be parked out along the Parkway, near the old Art Museum. The paving seems to be fairly intact out that way. They can fill the tanks with gas, put water and oil in and—well, get them in shape for running. . . . By the way, do any of the women know how to drive?"

"Yes, Vera does and I think—yes, there are three or four others do."

"We must forget regular routine, Bob," Toby explained with a new and dynamic voice. "You're awake at last! Every act we do, every thought we think, every move we make, all must tend toward the one end—success for our plan. Tell them to forego housecleaning, cooking and such tasks. Have them take the girls and give them instructions in driving the trucks. We will not be back until late, maybe not till tomorrow and then we may wish to mobilize our forces."

When I had imparted these orders to Vera, we took off in a northerly direction toward Willow Grove. Though there was wreckage strewing the ground everywhere, it was surprising how very little the landscape had altered from the day that Joel and I had flown over it daily to see the latest destruction caused by the unfettered atomic machine. It was comparatively easy to find our old laboratory. We landed, and as soon as my feet touched the ground, memories of the past swept over me with a poignant insistence; but Toby, guessing, did not let me succumb to their sway. Together we made a hasty inspection, first of the grounds, then of the laboratory itself. The contents of the huge building were intact, even to such little things as the coffee percolator on the electric range and the dirty coffee cups on the table where we had left them, Joel and I, on that last momentous day to keep our appointment downtown with civilization's arch enemy. The cot on which we took shifts at sleeping while working on the disintegration of the atom was there, unmade still, for during that last day we had occupied our butler's time with other more important tasks than keeping our house in order. The heat furnace was there with the wiring in place, ready to be used. A reference book was on the lab table, its pages still held open by a Braun tube. Dust had collected. A thick layer of ash from the conflagrations that had swept the Earth, had seeped in and mantled the surfaces and cobwebs adorned nook and corner.

Toby lingered before my desk. "All this," he resumed, without looking at me, "reminds you of tumultuous days, I suppose, Bob. . . . Well, we'll slip out and see Grubsnig's headquarters. . . . By the way, do you remember the day Dr. Murch's atomic machine, or Metal Worm, was set loose? Do you remember how you were mystified on waking the next morning (you had fallen asleep at your desk here after answering telephone calls all night) and finding a message from the mad Russian in your hands? The doors and windows had been locked and Dr. Murch's private guards had paraded the grounds around the building most vigilantly and still in some queer way Grubsnig's card had found its way in to you! Ah, I see you do remember! Who wouldn't? I was the unwilling emissary for the Russian who effected his entrance here at night. . . . Wait. It was simple. Grubsnig feared Dr. Murch more than any other person. He knew that Dr. Murch was and had been for years concerned with the disintegration of the atom; he also knew in his devious way that Dr. Murch had very well formed ideas as to the method of procedure. Add to this the fact that Grubsnig was being hunted by the minions of nearly every great nation in the world, what hiding place could promise more security and freedom from suspicion and equal freedom for advancing his personal aims and at the same time permitting an easy espionage of both your researches than some estate closely adjacent to this one? As soon as he knew definitely that the two of you were going to erect a laboratory here in Willow Grove, he not only purchased the large property adjoining this one on the north side but introduced his own workmen among the regular mechanics who were to put up your building. These men made such alterations during several night shifts that Grubsnig was enabled to come and go at will. You were both under constant surveillance except on several occasions when the activity of the police made it imprudent for Grubsnig to return to his own laboratory.

This," and Toby touched a cleverly concealed spring, "marks the beginning of a secret passage that leads down under the basement, from which point a tunnel connects with the outside."

Wild ideas raced through my mind at this recital. I dismissed and later forgot them because Toby had opened a sliding panel in the wall behind my desk and was beckoning me to follow him. Just as he had said, the tunnel brought us out into the grounds remote from the building and the worn beat of the guards. From here it was but a matter of minutes and we were wending our way to a squat, sandstone building which housed Grubsnig's own laboratory.

The workshop, as miraculously intact as our own, was domiciled mostly in a vast, artificially lighted cellar extending far beyond the line of the foundation walls.

Under Toby's guidance we quickly ran through most of the rooms, for there were many. When but two remained, Toby's steps began to lag. One room had been Grubsnig's private retreat and even after these years, it looked much as if the occupant had just stepped out for a brief errand. Books, papers and the other indications of the room being in use still lay naturally scattered about. Only the thick layer of yellow dust belied these first impressions. Toby hesitated, then passed the door leading into the room without taking me in.

"We might scatter the papers if we mess around in there," he explained. "I want a chance to go over Grubsnig's notes alone some time. He was engaged with one problem in particular which may throw some light on our difficulties.

"Now this next is the factory, Bob," he went on. "It was here that Grubsnig assembled his engines of destruction, for such they were to be. He was working on a vast scale. His diseased mind was urging him on to become the Mastermind of the Earth, the omnipotent ruler of the whole human race and he planned on a proportionate scale."

We crossed the long machine shop noiselessly over a floor of heavy rubber tiling and paused at the further end before row upon row of enormous metal cubes. From their short tubular projections and their general resemblance to ours, I guessed them to be atomic machines. They were not on tractors, as were ours, but rested directly on the floor.

"Each one of these," Toby explained, "is an engine for producing power from the atom's destruction. As you observe, the machines are composites of Dr. Murch's ideas and Grubsnig's. There are 200 of these, at least, complete and ready for use, each more powerful than your Metal Worms. With these Grubsnigs hoped to conquer the peoples of the Earth—and who knows?—perhaps even the inhabitants of neighboring planets! At the very climax of his program he was effectively stopped by one detail: he could not put into operation any of these machines, because he lacked a protective garment such as Dr. Murch invented in his so-called heat suit. Grubsnig's men were attacking the matter when he discovered that Dr. Murch had already accomplished this same end. Grubsnig, as you remember, stole this suit very promptly and planned to duplicate it in sufficient numbers to supply the operators of his atomic machines. In the meantime, though Grubsnig had erred fatally in releasing your Metal Worm on a wild rampage around the Earth. There was no time left after

that for anything, and so, Bob, in that closet to your right, is Dr. Murch's heat suit ready to be donned just as Grubsnig left it there."

Shortly afterward I sensed that Toby wished to be alone. I had by now learned to navigate the Jay Bird and consequently when I suggested returning to the Memorial alone, Toby's face lighted with pleasure.

"I was afraid to hint that," he admitted. "I want to hatch out some scheme for confining the action of the breaking atoms without losing any of the recoil. Send Ottokar back later, will you?"

I returned to the Memorial at once, leaving him poring over the papers in Grubsnig's private study.

Orders From Space

IN three days my boys had salvaged a great host of commercial trucks, hundreds of them, and placed them in orderly ranks along the Parkway. Upon my return I had joined them in this, releasing Ottokar and the Jay Bird for trips between the Memorial and Willow Grove. Toby Brown had immured himself in the Russian's laboratory and nothing would budge him.

The work of preparation at the Memorial went on apace. Glistening new trucks were trundling by intermittently all day, coming in from the city's Automobile Row on North Broad Street with the youngsters at the wheel thoroughly enjoying themselves and thrilling at the thought that they could go forth and help themselves to the best with no one to say them nay. Other trucks passed and repassed under the watchful eyes of the women who directed the embryo drivers in their first practise trips. Boys were struggling with spare tires, of which I had ordered two for each vehicle and others forged for tools and spare parts to fit the various makes of trucks. Some were washing the trucks, some polishing, both needless tasks, and lastly, Ottokar, with the genius of youth in avoiding needless effort, returned one afternoon with several gasoline tank trucks, laden with fuel. We secured more of these later to make us independent of local supply on any journey we might make, for I presumed Toby's plan included a trek to some remote spot where the terrain might be better adapted for the operation of the atomic machines. If the recoil was to be set off on the opposite side, the journey would assume the proportions of an undertaking beset with many difficulties. Thus details which Toby had omitted were considered and attended to. Ottokar and the boys secured ample stores of imperishable food in large vans; barrels and casks were accumulated for drinking water, for we had learned years ago that water existed in smaller quantities now, due to the disappearance of streams and lakes into the inner recesses of our Earth.

But these are all distressing details to me now; they do not grip me or absorb me any longer. How can they? They seem so unrelated, so small, so distant in the light of what confronts me now. As I write these words with a wildly hurrying pen, my eyes stray irresistibly away from my sheets to the great crater Tycho and its remarkable ray system which I can see clearly now with my naked eyes. To the north and east Gassendi bids for my attention. I can make out the strangest details in the wide maw of Theophilus and then the little pockmarks about Copernicus seem as if some playful giant had thrown some colossal pebbles into the one-time soft mud

of the lunar surface. Odd how even the imminence of death wanes with the peace and the grandeur of Mare Serenitatis drawing one down to it. Odd, too, how the Moon has always had this magnetic quality. It's Moonmadness, perhaps.

But there I go!

One night, after I had conceived of all possible needs for our impending expedition, including a jib crane with the necessary tackle and windlasses and also a steam shovel which I thought might be a convenient utility in mending the roads over which we traveled, I decided the time was opportune for revealing our plans to Joel, who was so far ignorant of them.

As usual, our sets were performing well. After a few general remarks, I told him of the concentration of vehicles about the Memorial. He was nonplussed.

"What can you possibly want with them, Bob?" he asked.

Disregarding his question, I recited the other steps we had taken and ended by a description of our visit to the laboratories. About our own he was extremely anxious to hear all possible details. When I mentioned the coffee percolator and the dirty cups and the unmade-up cots, his voice faltered with longing: I could not talk too lengthily to suit him.

"And Eddington's book was still open to the right page!" he marveled. "I was reading his theories, but, Bob, I don't agree with them any more. It's just a fluke of chance that we succeeded with the breaking up of the atom. I have a new explanation I'll tell you about sometime."

The enumeration of what we saw in Grubsnig's workshop did not surprise him. The location of the laboratory adjoining ours, the presence of the atomic machines, the recovery of the heat suit, not one item elicited other than a casual, almost mild interest.

"That Russian, Bob," he stated, "was a genius, absolutely with no peer! It is unfortunate that his efforts were directed into the wrong channels, unfortunate that his mind was diseased. He might have advanced human knowledge considerably. I knew it was nip and tuck between him and me with the life blood of civilization in the balance. I'm sorry he is no more; an operation, cranial, might have brought about a miraculous metamorphosis in his mental outlook. More than two hundred machines, eh? All more powerful than ours! I suppose you have started their destruction already? It will be no mean task but the sooner it is done, the better!"

"Joel, we're not going to destroy those machines," I rejoined, quietly. "We're going to mount them and use them!"

"You don't mean that," he replied. "Have you forgotten so soon the lesson we learned?"

"Nevertheless," I insisted, "we are going to use them."

"You will regret it, Bob," he warned.

"The stakes we are playing for are big," I answered and then delved into the story of Toby's project. Joel would have none of it, would not listen at first and then interposed the same sort of rebuttals that I had employed against Toby. He pictured dire results, thought the whole plan was a fantastic impossibility.

"When do you expect to perpetrate this fool act of yours?" he asked, finally and I had a suspicion he was hanging on my words with more than usual interest.

"When the Sun, Moon and the Earths are in conjunction, have the same right ascension," I replied.

"With the Moon between the two Earths or between the Sun and the two Earths?"

"What do you mean?"

"When you take off—is that the right term, Bob?" and he laughed, grimly, "will the arrangement be the Sun, Moon, and the two Earths or the Sun, our Earth, the Moon and your Earth?"

"The first, of course."

"You are intractable," he pronounced and then renewed his flood of arguments, disputing my reasoning step by step. After a bit, realizing I was obstinately determined upon my course, he suddenly changed his attitude, at first accusing me of not taking into consideration the lives of the billions on his section of the Earth and then, with another change of front, seeing that I regarded this last argument as specious and plausible only on the surface and totally without sincerity on his part, he abandoned his objections.

"Bob," he said, "I still consider you in my employ and your pay still goes on."

"That's ridiculous," not guessing his trend.

"A few hundred thousand miles between us doesn't alter the situation," he retorted. "That being the case, Bob," he persisted, "your proposed move meets seriously with my disapproval. Stop being obstinate and come to your senses."

I heard a step behind me. It was Toby Brown, just returned from the laboratory. I looked at him significantly and he shook his head negatively.

"When it's all over, Joel," I spoke into the microphone, "you'll be the first one to thank me."

I heard him swear, a rare occurrence with him.

"Now, listen here, Bob," he almost shouted back, "I absolutely forbid you to proceed with the project and I expect you to do all you can to prevent this Brown from doing the same!"

"What's that?" I cried, amazed.

"You heard me the first time," he flashed back and I could hear his breathing. "I command you to stop!"

This was something new. "How do you get that way, Joel?" I said, unevenly, lapsing into slang.

"For God's sake, Bob—" and his voice ended. I heard a commotion out there on the Second Earth and then the set went dead!

"What can it be, Toby?" I asked, helplessly.

"He's in trouble. He doesn't want to endanger you." Brown joined me at the instrument and tried to wrest a spark of life from the receiver but in vain, for the power had been turned off at the other end. Ottokar volunteered to stay on watch in case anything came through, while Toby and I drew aside to discuss this latest development.

The New Danger

AS I look back over my life, especially since I became intimately associated with Joel, the realization breaks upon me that I can never be a hero, that I am not made of the stuff of which protagonists are put together. As a demigod I register in the minus scale. There must always be a leader for me, someone who will issue the ultimate decree, the last word that is to guide me on the proper course. Had Joel been nearer, his wishes would have swung me into

line, but he was out in the celestial voids and Toby Brown was close at hand. Besides the quiescent, passive, dormant life that lay in the offing for me, if I followed Joel's dictates, was hardly tolerable. Toby, one-armed, scarred, almost unprepossessing and ill into the bargain, was still capable!

It strikes me that that is a decision which I should not have made! Heroes do not make mistakes. I did. I turned my back upon a life that was serene after a fashion, though isolated from the rest of my race, to one of suspense, anxiety, my days, my very hours numbered. As I write these words I am making a silent wager with myself that my grave will be in some one of the "fossilized" craters I can count in such numbers at the Moon's south pole . . . !

An inspection of what had been accomplished in his absence elicited words of warm approval from my companion.

"Tomorrow we'll take some trucks to Grubsnig's place and begin loading the atomic machines. With motor the trip will be nearly thirty miles one way because the highways so near the Precipice here are in bad shape. I've plotted out the detours to follow—did it in the Jay Bird this afternoon."

"How will we manage all these trucks when it comes time to move?" I asked. "We haven't enough drivers. Some of the children are too young."

"We can tow the trucks, using the Metal Worms. I located three of the latter during the past week: I suppose the others are lost forever but if they are never found, it won't matter. Actually we have 260 of Grubsnig's machines. Each of these explodes six atoms at a time as against only one in your Metal Worms. Contrast the power developed! One Worm sliced the Earth in half. Of course it was aided by the blasting effects of vast stores of natural gases which were released from the bowels of the Earth and exploded, but even discounting this, we have a tremendous force at our command. These new machines are more than six times as powerful. I gave up the effort to calculate exactly what they would produce, because by the very nature of the problem my calculations had to be more or less empirical

"We'll leave a sufficient number of Grubsnig's machines here to break our fall upon the surface of the Second Earth; the remainder we'll transport further north. The machines will be arranged side by side and discharged by wireless in pairs, at intervals of several seconds. At the first discharge, two will go off, at the next, four, then six and so on until by observation through the telescope and with our measuring instruments it is shown that we have imparted a jolt adequate to form a new orbit by which our Earth will drift gradually to its destination."

"How gradual will that drift be?" I asked.

"The entire journey shouldn't require more than three or four hours. We'll travel close to a hundred thousand an hour, although toward the end that velocity will be considerably reduced, naturally. At the proper moment, the machines on this side will be discharged in about the same sort of order, but, I think, with fewer and fewer machines at the very end although that, too, is something I have to work out yet. Even with all the precautions we can take, we'll land with quite a goodish shock."

"And will we not crush millions of the inhabitants

and wreck the cities and inflict other fearful damages?"

"If our computations are not misleading, the two Earths will come together in such fashion that the wounded parts will meet, thus making whole the terrestrial globe as far as it is now possible to do that. It's unlikely that Joel and the others ventured to investigate the flat disc side of their Earth any more than we did ours. Consequently no one will be caught between the halves, but there's every chance that the armies of clumsy, ugly brutes which the catastrophe released will be buried again. That will be a deliverance."

I shook my head dubiously. "I've made some estimates of my own," I admitted, "and my apprehensions have been redoubled. Many of our cities on both fragments will be demolished, if not directly then by the jar of the impact."

"What if that is so, Bob?" he returned. "That would be a mere bagatelle compared to the gradual loss of our water, atmosphere and as a subsequent result, the extinction of all plant and animal life. Imagine, too, the crowded conditions where Joel is—oh, don't chafe and stew, we are doing the right thing!"

Then he revealed what his close application with the slide rule and his array of equations had achieved: as electricity is not my domain I can give no other than an impression of his method for restraining the action of the atomic disintegration from spreading like wildfire over the whole universe. A vast electrical energy screen, conical in shape, with the apex of the cone about ten thousand miles out in space, was to be thrown about each group of atomic machines, the power to be drawn from the Metal Worms through the heavy cables still left from the excavation of the vast underground cities mentioned in my previous account. This screen was to confine the atomic action without in any way reducing the recoil. I ran through his figures and on the surface of it, the theory seemed practical.

While we were discussing these matters, Toby had been getting out some photographic plates. Ever since my household had eased into a final routine I had made it a sacred duty to photograph the Second Earth at constant intervals. With Toby's arrival in our midst, this had been continued. Toby, more of an astronomer than I, had taken this over as a normal task in which he found much delight. Tonight I assisted him and when the plates had been exposed, we set about printing them at once, suspecting we might find some trace of the discoloration which had disturbed us before. The prints, however, showed not a vestige of the rust color, but in comparing this latest plate with the first few, that I had taken years before, we made a startling discovery.

"Toby," I cried, seeing it first, "look here! No, here, the northwest rim of the disc. Now look at this plate, same spot. See the difference? The contour has changed—very pronouncedly—sort of crumpled—like crisp pie crust!" I became more excited as I glanced rapidly at the other prints while Toby was studying the two. "That's not the only spot," I blurted. "Here and here—why the entire rim is undergoing a modification! And look at the center of the plateau: it seems to be humping out, piling up. What is it?"

Toby scrutinized the consecutive photographs without a word. Apparently he did not hear my further ejaculations. A pallor spread over his wounded face and suddenly his old pain gripped him. His handkerchief was suffused with blood; he coughed it up in quantity.

The prints and negatives were forgotten. I placed him on the flat of his back and rendered such aid as I could. The spell was more prolonged than before. When he had come through it, I would not permit him to talk. Very obediently but with a perturbed look on his face, he sought his couch where he tossed about considerably before drifting off to sleep.

That night Joel's set was silent as it had been every night after that last talk. Finding that my time was wasted here, I, too, sought my bed, planning how I would move the atomic machines on the morrow.

When I awoke in the morning, a little later than usual, it was to find that Toby had fueled the Jay Bird with extra supplies and taken off to the west at dawn.

"Leaving for an exploration of the edges of our plateau," he wrote in a note pinned to his pillow. "Will be gone several days. Will keep in touch with you by radio. Let Ottokar wire the atomic machines after you get them to the Memorial. He knows how. Simple! Leave machines in trucks."

There was plainly a connection between his impromptu trip and what the photographic plates revealed. I had small chance, though, in dwelling upon his latest development. After a meagre breakfast, sixty of us set out in trucks for Grubsnig's laboratory. The work of loading the machines proved far easier than we had expected. With the aid of the jib crane and the fact that our gravity was much less than it had been, we managed to hoist the first sixty into our trucks by dusk and returned in the evening with our headlights casting a glare over the vibrant animal world through which our long procession straggled over many detours and with much honking of horns. The spirit of achievement made us light of heart even though we were tired and dirty.

The next day it rained heavily in the morning, filling the breaks in the roadways with pools of mud and water. On the way back, one of the trucks skidded down a steep embankment, causing a delay while it was hauled up again. Charlie, a younger son, escaped with minor scratches, but the truck was so badly damaged that we transferred the atomic machine to another. Although we had loaded the second day's freight in shorter order, the mishap had consumed the time saved and more and we reached the Memorial at a belated hour.

Toby was calling when I stumbled into the building. He must have pushed the Jay Bird at a respectable speed. He reported briefly passing Peking and still following the edge of the Precipice. He had witnessed two earthquakes, battled through a devastating storm and found long extinct volcanoes belching smoke and ashes.

Not a word about the real purpose of the trip at a time when we needed his help, not a hint of what was happening along the Precipice! That was a sign something was wrong!

I pushed the moving of the remainder of the atomic machines, but a number of unexpected accidents prolonged the task for many days. At one point, when the work was going along smoothly a wooden bridge which our party was crossing collapsed like the elder Oliver Wendell Holmes' "one hoss shay." It had been weakened by the inroads of the cloud's of new arrivals in the insect world which swarmed all about us and frequently made our trips exceedingly painful. These insects attacked woodwork wherever it was exposed to

their depredations. Instead of endeavoring to rebuild the bridge, we cut the slope of the banks down with the steam shovel and crossed over the dry stream bed.

There were other delays, breakdowns, flat tires and even collisions of a milder sort as the children vied to be first loaded with the atomic machines.

Returning to the Memorial, I encountered new trouble. Vera had been stung by an insect the day before. This had developed into an infectious illness which soon spread to two of the other women and several of the children. Time had no meaning for me after that. Just as I was wishing for Toby's return, his motors roared overhead and he alighted with the Jay Bird, much changed for the worse. His haggardness, his emaciation forced a cry of alarm from my lips.

"Not you, too, Toby?" I exclaimed, thinking of my sick list. "You're as pale as a ghost! And when did you eat last?"

"Forget me, Bob," he importuned. "Just a spell of—well, we've other troubles to fill our time than—"

"Yes," I said, "we have our troubles. Vera and some others are ill and—" but I broke off and led him to the door of the infirmary which I had established. The children's chatter had ceased, a sick room quiet had settled over the entire Memorial.

"This makes matters even blacker, Bob," he said, hours later when we had a chance to talk again. "I'll leave Ottokar with you. If you can take care here, I'll go along with some of the boys and bring in the Metal Worms. There is more need for haste now than ever before."

"What's wrong? You haven't told me the facts yet."

"Aren't your hands full enough already? It's humanly impossible for you to do more. Additional worry will hardly help. . . . It's this, Bob: if we do not get our atomic machines up into the arctic regions and launch our bit of the Earth on its way soon, we may have nothing to launch later!"

He led me out of earshot of the others.

"There isn't any doubt that the rim of the Second Earth is crumbling. It's a natural evolution. Our universe doesn't tolerate a half apple-shaped body. Natural forces tend to reduce all bodies to spheres which later become flattened at the poles. Oblate spheroids, you know. This change is now going on out there. The material in the outer rim is being gradually drawn down to the center of the vast plateau where the pull of gravity is building up the flattened side. Of course that can't go on without danger to life."

"Your trip, then, Toby," I inferred, "has shown that we can expect the same here?"

"Expect, Bob? Expect?" He paced the floor violently, pounding his chest in exasperation. "Man, it's a wonder we are still here! It's going on all around us. Didn't you notice that fissure in the ground about a mile to the northeast of here? . . . And I wanted to atone! I wanted to do something useful! I won't have the chance! I'm too late."

"Too late?" I exclaimed, catching some of his unrest. "Why, that fissure's been there for several weeks!"

"It has?" At first he seemed to doubt my word, then he became immeasurably relieved. "Perhaps we'll still have time, then. . . . In China I saw an avalanche in which a whole city went completely over the side! I can't describe it! The same will happen here, cer-

tainly. The Memorial, our radio, everything will go in one monstrous landslide!"

"But what shall we do?" I asked. "Go further north? Migrate elsewhere? I'm not anxious to leave all our scientific equipment behind Toby."

"We can't escape that way," he shot back, still packing the floor. "Upheavals, earthquakes, volcanoes, about every form of destruction known to us in past experience are rending and tearing at our fragment. I was lost for hours in just one cloud of volcanic smoke and ashes over the Japanese Empire. We'll be torn apart! Scattered into space! Drifting forever as molecules in the illimitable expanse of outer space!"

"But still I don't see what we can do about it," I insisted.

"Do? We've got to go ahead with our plans—and faster! Place the atomic machines on the other side and take off!"

"But we won't be in syzygy for about three months as I figured it last night," I protested.

"Three months?" Toby paused before me, trying to control his emotions. "You don't seem to understand that in three months you and I and the others may have nothing left to stand on. We'll be mangled, frozen, dead on some pellet of rock, embalmed for eternity, minute flotsam and jetsam shooting through the interplanetary wastes! . . . Oh, we can't wait! Anything is better than waiting! . . ."

"Another thing, Toby," I argued. "To make us land on the Second Earth, we must mount our recoil guns or atomic machines at the North Pole to be exactly opposite the plateau, otherwise we'll miss our mark and shoot off at a tangent."

"And your objection is that we can't drag our heavy outfit over the polar seas and ice fields?"

"Yes."

"We won't try. When we've gone as far north as we can, we'll stop, set our equipment up, make new calculations and then correct our aim." He put his hand on my shoulder, repressing his impatience. "Are you with me, Bob?"

"To the limit!" I answered and a wail of pain drew me back to the infirmary.

Adrift

TWO weeks—or was it three?—went by. Each tick of the clock seemed to make the doom of our project more certain. I could do nothing to help. Toby worked alone. Sometimes Ottokar found an opportunity but rarely. I needed him.

The illness continued. We were handicapped. The malignant disease defied our efforts. It did not yield to any treatment. Despite frantic precautions and frequent fumigations, others in the household contracted it. We were helpless in such a situation! A large medical library to which we had recourse did not help matters. Instead of crystallizing any idea we might have had, it befogged all our diagnosis with its myriads of symptoms and reactions. Of what value all the printed medical knowledge? None to us in our present predicament! With the unabated spread of this newest affliction, I wondered if Toby's scheme was to be jeopardized by the lack of numbers.

"A conspiracy of fate," Toby opined, wanly. "It takes the heart out of one."

"Don't give up," I returned without spirit. "No life has been snuffed out yet. There is still a chance."

"No, I won't give up," with the latent fire in his eyes smouldering into view for a moment, "no." Then: "The atomic machines are all here now. I'll have to take Ottokar for the entire day tomorrow. One of the Metal Worms must be dug and I can't operate the steam shovel with one hand."

Ottokar went with him.

Daily I stole time to make a pilgrimage to the fissure we had discovered. My heart was not in the errand. I made careful measurements of its width, its depth and such variations as I could detect. Nearest the Memorial, the crevice had altered little; but further along on the Roosevelt Boulevard and through the towns beyond, it had opened wider across the dry ground and a thousand tiny thread-like cracks had branched out from the main stem. I said nothing of this to Toby.

There came a day when the ground trembled, the glass in the windows and the museum exhibition cases fell from their frames. Insects poured into the building. More needless work! There was a low, heavy, rolling sound, continuous, terrifying. Was it the beginning of the end? The air was filled with dust. We waited, afraid to move, afraid to give voice to our thoughts. Blessed silence engulfed us at last. There were signs of relief. It was not yet our time!

Leaving Ottokar temporarily in charge of the patients, Toby and I took the Jay Bird aloft through the gloomy, murky, dust-laden afternoon toward the northeast where cumulus mountains of smoke mingled with the dust. A fear gripped me. The controls felt cold to my touch. We soared high, then plunged down into a bottomless pit with all the lights on, trying to cleave the pall of shadow.

My fears were realized. The Boulevard was gone and with it Tacony, Bridesburg, Torrdesdale, Somerton and—but these are minor details now. The rim had slipped, broken; the 'slide of earth had left a wide, jagged arc and pushed the edge back for miles. Near the Memorial the fissure had become a yawning black abyss into which we threw pebbles, but without hearing the stones strike bottom. We returned, silent, our thoughts on the crevice and the new mountain which the landslide had formed on the plateau!

At bedtime, Toby lingered for a moment.

"In the morning, Bob," he said, "we must start out with the atomic machines in the morning."

"In the morning," I agreed, listlessly and turned away.

With a dull head and lagging footsteps I joined Toby at dawn. I was not interested. I was apathetic; my thoughts wavered and staggered from one idea to another without alighting anywhere in particular. Toby and Ottokar, I saw from a distance, were regarding me oddly and evidently discussing me. The air was filled with the chugging of motors and the clanging of chains and tow lines. One Metal Worm was to be left at the Memorial to discharge the brake recoils while the other two were to make the journey to the far north for the send-off on their broad, rubber caterpillar treads. Toby's untiring thoroughness had provided trailers and special hitches from the ruins of a neighboring town. Into these were loaded the atomic machines from such trucks that did not have drivers and the entire group of trailers were hooked to the two Worms. The chil-

dren and the few women assigned to the expedition were seated behind their steering wheels awaiting the signal to move.

"How are you feeling, Bob?" Toby greeted me anxiously.

"Ready to go?" I asked, paying no attention to his question. "Which Worm do I drive?"

"Yes, we're all ready. . . . Did you sleep well?"

"Not very."

He and Ottokar exchanged glances. What was the matter with them? Why did they look at me so? I felt mean, ready to take affront, but too tired actually for anything but to be left alone. My surroundings seemed to be cloaked in a haze—a welcome sort of haze. Outlines were blurred. Nothing was sharp. When the long train of vehicles finally moved away toward the north, I had a detached feeling; my mind would not grapple with the momentousness of this trek that was starting right under my nose: instead I made a mental calculation of the entire length of the caravan as it passed out of my sight and found it to be over a mile long. I derived secret pleasure from this result. . . .

Ottokar took me back into the Memorial.

Indistinct memories of being forced to lie down, then dragging my bed out into the open against Ottokar's protests, then refusing to permit anything to pass my lips, these and others indicated the passage of days and then of weeks. Time seemed to be slurred over for me; one day was like another but always there was Ottokar, a big Ottokar, huge and overpowering at times and then a small, insignificant Ottokar at whom I laughed uproariously. It was funny! Odd, too. I could not understand. How did he do it? Now small, now large, then small again and so on without end!

There were gaps when I remembered nothing, blank spells when I did not exist. Finally came the time when objects became clearer; the dimness and uncertainty were lifting, and Ottokar became more stable. He no longer surprised me: I knew exactly how big to expect him when he appeared from nowhere to bend over me and talk to me. Then one day I answered him and asked him a question.

"Ottokar, my boy," I said, "don't hold out on me. How about a little chicken broth and rice?"

His face lighted up.

"Say that again, Dad," a smile wreathing about his lips.

"A little chicken broth," I said again, "but not much rice, just a few grains."

Like a shot he was gone. I heard his gay whistling thereafter and the rattling of a pot. . . .

One bright day I left my couch and took hold of the threads of my life where I had let them go. There were no tidings from Joel. A photographic plate which I exposed showed a marked continuation of the crumbling process on the Second Earth. Well, it would not be long now, I thought, and listened to Ottokar's report on how Toby was doing. His expedition was still forging north, now through the remoter Canadian wilds, but the going was becoming so difficult and dangerous it was certain he could not persist much longer.

The sides of the crevice northeast of the Memorial which we had watched so constantly had moved farther apart until now the gap could no longer be crossed without a bridge of some sort. The tiny, branching rills had magnified themselves into something more.

Not long now, not long now, the refrain ran through my mind again. My heart was leaden. A tremor and there would be nothing more to tell!

A visit to the infirmary lifted the gloom several degrees: there were no new cases of the disease and the old ones were improving, some had even recovered.

"Ottokar," I said, "you have excelled as a nurse and doctor. You pulled me through and all the others, too!"

"The credit's not mine," he answered, with a pleasant grin. "You just wouldn't take any medicine or food. You gritted your teeth and were quite—stubborn. But you improved, Dad, and I tried the scheme on the others—and there you are!"

That was two days ago. It is Friday today. Friday and it is our moving day! I've never been suspicious, never entertained any old folks' tales, but here, with annihilation facing us all, out of the medley of memories that beset me now of my boyhood, there's one that stands out incisively of how my people regarded moving on Friday. One could move on any other week day, but to do so on Friday was a most ominous step, portending mishap, misfortune and bad luck. Still, here we were moving our homes, our very and only earthly home—on Friday! No, I'm not trying to be funny. A chill creeps up my spine. It persists. Strange, the air is not cool and I'm not hidebound, not narrow and stupid in my thought. Never have been! Then why the chill? Is it an omen? . . . But I wander. I must keep my mind to its set task. I must not fancy, I must not harbor strange thoughts. . . .

Thursday evening I dialed Toby's camp. As I had foreseen, the expedition had reached its ultimate point north: further progress without hazard to life and equipment was impossible. Barring a few lesser accidents, the journey had been completed despite obstacles and difficulties.

"We are ready to come back now, Bob," Toby said, "but we'll fly back if possible. Time's short. We've felt several earth tremors. The danger is great. The trip out consumed entirely too much time and putting the atomic machines in place—well, I hope we've made no slip-up! It was hard. If either you or Ottokar could bring the Jay Bird—"

"We'll leave at once," I assured him. "Will we be able to find you?"

"Easily," and he gave me the proper flight instructions.

Who should go? Ottokar's eagerness could not be disappointed and therefore it was he who prepared to respond to Toby's call.

Ottokar gripped my hand a few minutes later. It was farewell in case—we didn't say the words, but the widening of the fissure was uppermost in our thoughts. Without hesitating, without circling, he zoomed up and away into the dusk. He had given her the full gun! Wide open! Here one moment, gone the next! My household had come out to see him off. They gave him a rousing cheer but his flight was too swift.

At six Ottokar had crossed the Canadian border, at seven he had passed the southern tip of Hudson Bay at an elevation of 20,000 feet and at eight his voice came to us exultantly.

"Must be near the camp—a faint, light haze on the left ahead—light like a twinkling candle—getting bigger—a signal fire—searchlights—it's the camp now—hovering—landing. . . ."

We were all at the loudspeaker, including the two or three still convalescing. Ottokar had left his set open. The microphone brought the sounds to us. We heard everything. The clamor of the meeting came to us clearly, then Toby's voice issuing orders for an immediate return. For several hours the Jay Bird performed a shuttle service, with Toby and Ottokar alternately at the stick. By dawn the entire party had been conveyed south to the north shore of Lake Erie, or rather the remains of that lake. Here a light breakfast was eaten and once more the flight was resumed, this time with the addition of another plane which was found in a tumbled hangar at a nearby field. By eleven today the entire personnel had landed at the Memorial. A cold lunch was served and then there came a period of rest during which some washed, some slept, and others told the story of the adventurous trek to those who had remained behind.

"We'll wait until complete darkness sets in," said Toby, while we were strolling in the twilight for the last time in the general direction of the fissure. "In that manner we can watch our progress through the telescope from the very start."

I was dubious about waiting. All day I felt queer, unsettled. I told him of the condition of the crevice and we immediately hastened our footsteps to make the last inspection. The secret qualms with which I was obsessed I kept to myself.

The black abyss yawned before us, wider, more ragged, more threatening. We certainly could not postpone our project for another day. Then my nose detected a faint acrid smell. We followed the odor until we saw the cause, a fitful cloud of haze, thin, languid in the afternoon air and curling upward listlessly from the depths.

"That's new," I said. "I don't like it."

"Nor I, Bob," my companion answered.

The smoke came from beneath an overhanging clump of dirt and rock. Toby lay down on the edge to seek the source.

"It's dark under here. I can't see. Hold my legs, Bob, will you?" He tried to say more but a fit of coughing stopped him. The smoke, probably.

Thus held, he crawled out further and further over the edge until the upper half of his body was out of view and I warned him to stop. Not heeding me he crept out more and more and I dug my heels into the ground desperately. Then I shouted in alarm. One shoe of Toby's had come off in my hand. I held him by one leg. Sweat began to pour down my face. I felt a convulsive heave of his body and I heard another smothered cough. Frenzy lent me strength. I pulled and tugged at him, none too gently, dislodging one stone after another into the crevice with my struggle. I heard the loosened debris go bounding down into the darkness until the sounds were lost in the great depth. I pulled harder. I seized him about the knees and bent over, reaching out for a higher hold under the belt around his waist. With gasping breath and the perspiration in my eyes, I gave one mighty tug and brought him entirely out.

The moisture in my eyes hid him from me for several moments. When I did see, I was horrified to discover his face in a bath of blood. Another attack! Would misfortune never cease to dog our steps? I reached for him again.

"Don't mind me," he whispered. "Get going. Go, go! Feel that?"

The ground moved under my feet. It was a slight movement, but noticeable.

"Drop me, Bob," he begged. "Run! You have over a mile.... Take this... left pocket... read later... after..."

I took the envelope from his pocket and put it into my own. Lifting him in my arms, with the terror of another possible quaking of the earth giving me impetus, I started stumbling toward the Memorial. From my many pilgrimages to this spot I recalled an antiquated old 1932 Ford in a shed somewhere in the vicinity. Groping blindly in the falling darkness I found the car, placed Toby in it and started for the Memorial. One of the children must have tinkered with the car recently. Despite its appearance and age, it took us home in short order.

My pulse was running high. The black spectre of Death haunted me. Toby's shell of a body appeared ready to give up its soul. With Ottokar's help I carried him up into the observatory and placed him on his cot after it had been drawn near the big telescope. There I gave him something to drink, gave him fresh handkerchiefs and made him comfortable even while I entertained slim hope of his recovery.

"I thought you'd want to be here," I said, "when we take off."

"Yes, Bob—but hurry!"

Ottokar, in the meantime, had brought my household together for last instructions. I counted noses as of old and then announced that the hour for which we had planned these past months was here at last. Joining courage and a light heart, I spoke briefly.

"Vera and Ottokar will be in charge. Ottokar has fast cars ready. Start at once in a northwesterly direction and keep going until it is all over. Get as far from the Precipice as possible. If you are left, come back to look for us. Farewell and God be with you!"

There were cries of anguish and loud sobbing but I turned my back upon my family. My own eyes were wet and a lump rose in my throat that made my voice husky. For a time things swam before me in a mist but Toby's voice recalled me.

"Let's shake, Bob—before the grand play!"

His hands were cold and inert but the fires were in his eyes. I tried to be light. "At last we'll see why old Joel doesn't want us with him!" I said, but it was sorry innuendo and Toby saw through it.

Outside the cars were starting and the last calls of farewell were shouted up to me. The water in a glass by Toby's cot oscillated gently. My children, my family would not get away in time! The Precipice was about to cave in! We would all be plunged down upon the plateau! Buried forever in the heart of a new mountain, crushed, done for! Millions of years from now a reborn race would—but, no, again it had been but a premonitory shiver of the earth! The water in Toby's glass was still again.

I turned to the telescope. Under it a table had been devised with the control buttons. Each button represented an atomic machine, the white ones those in the Canadian wilderness, the black ones the machines in front of the Memorial. The latter glinted dully in the shine of the electric lights. The observatory dome had

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The Doubt

By Ben Aronin

LESLIE MAPLES, once sergeant pilot, American Escadrille, glanced curiously at his visitor, but it was not until he heard the pleasant "Good Morning" uttered with a decided German accent, that he rose to his feet in a gesture of surprised recognition.

"Why, you're—you're—"

"Charles Richter," answered the other calmly. There seemed to be a glint of cold humor behind the thick-lensed, gold-rimmed glasses as he observed Maples' evident confusion; and Maples, recalling a certain cold morning in the fall of 1917, wondered greatly at the strange anti-climax that had brought him so unexpected a visitor.

On that memorable morning he would have sold his hope of heaven for another chance at this squat, genial "Mad Falcon," who now sat so calmly and unconcernedly blinking at him. On that occasion his plane had been so riddled by Richter's pellets that he had been forced to head his Nieuport earthward in a desperate attempt to effect a safe landing. Even now, he could feel the pitch of his plane as it struck the wires encircling the field, hurling him completely out from the cockpit in spite of his straps.

In the hospital, nursing a broken hip, not to mention other injuries, one thing only had consoled Maples' wounded pride, and that was the knowledge that the Falcon's striped plane had crashed behind the German lines with an unconscious pilot strapped to the front cockpit. He learned also that Richter's shoulder had been shattered as a result of his skill with the Vickers. And so they were "quits"; but the doubt remained. Who was the better man? Who could win if given another chance? More than anything else in the world he wanted that chance.

Maples scrutinized with some awe the ugly, scholarly face that met his gaze across the desk. How ridiculously small the black bow tie seemed against the glossy celluloid collar. As their hands clasped almost mechanically, Maples gritted his teeth, inwardly confounding the fool doctors who had insisted that they had removed the lead from his shoulder. If they had their way they'd be probing yet—the damned idiots. Richter saw him wince.

"Souvenir, eh? I got mine too." His hand went to his side and from there moved to his shoulder with a significant gesture. Then, as Maples nodded, "You heard, eh?" Richter slowly seated himself. "So you're a lawyer?"

Richter cast an amused glance about him, and it seemed to Maples that the blinking eyes behind those absurdly thick lenses were observing the layer of dust on the law books that ornamented his office sadly devoid of clients. His visitor passed his card across the table bearing the legend, "Charles Richter, Dentist," with an address in the poorer German district of the "Big Dump."

Fourteen planes! Maples had seen Richter's picture in a German paper several weeks after the armistice, but either the photograph had been extremely flattering or the last ten years had played woeful havoc with the pulchritude of his one-time enemy. He came to himself with a start. This was damned uncomfortable. They were measuring each other silently across the desk. His start brought a smile to Richter's face.

"You've felt it, too?"

"Felt what?" Maples knew but he could not refrain from asking.

"Why, *the doubt!*" Richter rose quickly from his chair. "They said you got twelve official—the others don't count."

"Yours made thirteen," responded Maples tonelessly.

"That's why I'm here," broke in the other curtly—"to contest number thirteen."

Maples searched his eyes for a twinkle. He was convinced that the German was bantering.

"Well, let it rest. It's ten years now; the game's been called."

"Ten years of piggish living. We work when we can, eat, sleep, drink, grow fat and lazy. Life has lost its interest, my friend." Then as Maples made no reply, "There was a Napoleon—ah, yes, I must not forget my own countryman, Nietzsche. But then again Napoleon was the man of action. He took thousands from the factories and gloomy workshops to give them a hero's hour of triumph on the battlefield. The misery of a lifetime for the ecstasy of an hour. A fair bargain, my friend, is it not?"

This irritated Maples. "That was wholesale murder. He was a born killer. Nothing heroic about him. Why, they followed like sheep."

"Rot! Better one page of glowing tints than a thousand blank sheets. Look! You're getting pot-bellied." Maples flushed. It was too true. "And I—I'm getting near-sighted. Almost blind!" He snatched off his glasses with a savage gesture. Maples, stupefied at the other's vehemence, regarded the red mark on the German's nose where the glasses had left an imprint.

"Our senses grow sleepy without danger to keep them alert," Richter was saying, "and our bodies drag themselves—yes, that's the word—drag themselves to the grave. If only one moment—" He surveyed the American with a sharp glance of speculation. His red eyes shot fire. "Besides, we've got to know! A biplane like the one you had in the Somme, and I my striped darling—eh?"

Maples leaned across the desk. Was the man mad? No, in the German's face he could read only grim purpose. He strove to keep his mind calm, to be as poised as the other seemed. It had always been in the back of his mind; now it was steadily creeping to the fore. He wanted to know. God! How he wanted to know who was the better man.

"It would be murder." He spoke the words slowly.
"For whom? . . . The honors were even, my friend.
There might still be a Chapter Two."

The room was stifling. Maples walked to the window and flung it open, conscious of the fact that a pair of appraising expectant eyes were fixed on his every move. There below, the roar of the mob. How small the people looked. He could feel himself once more in his Nieuport, looking down from over the edge of the cockpit, the stick between his knees, his hand gripping the shovel handle, finger on the release. Then the dull staccato rattle of the gun perched on the roof of the plane. He felt his senses reeling. The German was speaking.

"Understand me, Herr Maples, I do not hate you. But there is always the Doubt. It has eaten into your heart, as it has eaten into mine. It isn't a question of sentiment. We didn't stop then to question. It was the fun of the thing, and we had to make excuses to our conscience. Let's be frank about it. Let's lay this Doubt forever. Is it a go?"

Maples' heart was pounding wildly. He was fighting to get that quaver out of his voice and make it sound like Richter's—deep, matter-of-fact.

"Just what do you mean?"

"Nothing but this. My plane is in a hangar at Newfoundland. I'm paying a mechanic to keep her in shape. I fitted her with two guns, ready for action. Why, I've even painted the stripes on her, and the Maltese cross." The German's eyes gleamed. "You could borrow one on the strength of your record. Let's say the 19th—that will give you a week; it will be ten years to a day since we finished Chapter One—"

"And this will be Chapter Two," finished Maples firmly, exulting in the fact that his voice was deeply resonant and betrayed no fear. Richter rose and stood stiffly erect.

"You are a worthy foe, Herr Maples. It will be dawn. Think of it! It will be cold, and it will be over the water—just over Captain Bell's lighthouse. Regular flying time. Five o'clock, wasn't it?"

He saluted, and like an actor in a military drama Maples returned the salute, wondering all the time whether this was not some sort of nightmare from which he would soon awake, to laugh at its seeming reality.

"*Auf wiedersehen!*" and with a nod the visitor was gone.

The slam of the door brought Maples back to earth. He looked about the office dazedly, half forming the intention to call Richter back. His eyes wandered to his desk where the dusty files stared up at him. Ugly yellow files, spelling routine, heartache, leaden monotony. He brought his hand to his forehead. It was covered with sweat. Hell! Had the ten years of idleness shattered his nerves? He thought of the uncertainty, the unrest, the agony of doubt. It wouldn't be as if he had anyone dependent upon him. It was simply a duel that he had accepted—somewhat spectacular, true, but what of that? Duels were being fought even now in Europe and people didn't think the participants mad.

Lieutenant Stroh shoved the aviator's cap back on his forehead impatiently.

"You tinkering idiot—all set?" he asked good naturedly.

"Sure, Chief, she's all right—fine," the mechanic answered with a grin. Stroh scanned the road eagerly. A little roadster was approaching at rapid speed down the

long slope that led to the landing field. The occupant brought the car to a stop and then, as though to belie his haste, got leisurely out. He was dressed in the faded uniform of a French aviator, the uniform apparently being several sizes too small for him.

"Mape, you old son of a gun." Lieutenant Stroh's arms were about his buddy. "Where the devil have you been keeping yourself? Three years dead, and then you bob up for a buggy ride. Well, kid, I'm all set to take you. Where'll you ride—front or back?"

"Never mind, Lieut, I'll go up alone if it's all the same to you." Then seeing the hurt look in his buddy's eyes, "You see, it's a sort of personal matter." Stroh looked at him wonderingly.

"Say, there's something queer about this. Your letter sounded kind of funny to me." He extended his arm as though to detain Maples. "It's three years since you've been up, isn't it?" Maples did not answer. He was fastening on the parachute which the mechanic had brought him. Then he noticed with some satisfaction the Lewis machine gun with the cartridge belt in place.

"She won't jam?"

"No, she's oiled—ticks like a clock. There's another belt, but what—Say, what's the idea? You're not practising maneuvers, are you?"

Maples clambered over the side, not wanting to hurt his friend's feelings, yet realizing that he could not explain. For the first time there was a clammy coldness at his heart. Fear? Bosh! It was just the unreality of the thing. Damn! His elbow had struck the side of the seat—his "funny-bone." He rubbed it viciously. His forearm was tingling and the pain made him irritable—awakening in him the desire for immediate action.

"Contact!" he wanted to shout. "*Essence et gaz!*" so swiftly had the years flown back. The roar of the motor sent his blood racing. The short grass bent back as though in the face of a violent storm. His nostrils dilated. The ten years had vanished with the first whirr of the propeller. He wondered if the trip he had taken with Stroh three years before had sufficiently acquainted him with the workings of the Curtiss. The roaring subsided. Maples nodded, and the mechanic jerked away the blocks. He drew himself back in the seat. The big plane started off uncertainly. The fog still hung over the field and the air seemed cold and damp against his hand as he waved to Stroh, who was running beside the plane shouting something unintelligible and waving his arms.

Maples noticed with a thrill the evenness of the field as the plane gathered speed. His hand pulled gently back on the stick, and almost imperceptibly the plane was fighting its way upward. His heart beat with a fierce joy. What was it Richter had said? "*The misery of a lifetime for the ecstasy of an hour.*"

He had been travelling east; now he pointed the nose of his plane northward, skirting the seashore. Far below him the rugged outline of the great rocks marked his pathway. He knew the lighthouse was next—weather-beaten old Captain Bell's lighthouse—and after that. With a suddenness that startled him, the sun burst through the mist. Past the lighthouse he perceived a dark speck that hung motionless in a white cloud, and a moment later he knew that Richter had kept the "Rendezvous."

His hand clutched the butt of the gun. What a devil that Richter was! He was saluting him with a

reckless series of wing spins, zooming up with the nose of his plane pointed to the sky, so that a tail-spin seemed inevitable. Completing the loop, he recovered, banked sharply and dove at Maples. The American saw the gauntleted hand wave at him for a moment and then swiftly withdraw itself. Above the roar of the motor he heard the dull rattle of the gun. Red streaks of fire darted toward him. The duel had begun.

With a nervous push on the stick Maples brought his plane sharply down below the oncoming Falcon, then zoomed upward, banking and driving straight for its tail. This would be short. He pressed his lips tightly together. His gun was on a line with the tail of his opponent's plane. Grimly he pulled the release and thrilled as the roller jerked around. A miss was impossible at that distance—yet to his horror he saw the Falcon continue on her course unscathed, watched Richter zoom upward, looping completely over him, and saw positions reversed, with his plane a fair target for the other's gun. The thing was incredible! He had emptied almost his entire roller at the plane!

Suddenly it flashed across him—and he cursed bitterly, subbingly. Fool! he raged at himself.

The bullets were blanks!

He should have remembered that. He hadn't confided in Stroh, and Stroh had given him the plane used by the army student in his maneuvers. A Lewis machine gun, perfectly synchronized with the revolutions of the propeller, rattling faultlessly—and blanks!

His first instinct was to wave to Richter, in some way communicating to him his helplessness. His plane suddenly lurched downward as the end of the right wing collapsed with the fabric flapping. Maples regarded it stupidly. Too late! Richter had him. He could hear the reports of the other's gun in back of him now. The lurch had thrown him slightly out of the line of fire, and Richter swooped past him. He caught a fleeting glimpse of the stocky figure bending forward, clutching the butt of the gun. He would turn soon—and then—Maples' hands were clammy with sweat. He was as one paralyzed. Almost mechanically he adjusted the chute. About nine thousand feet, he calculated; a drop over the side and safety. But the other would not know—would always believe that he had misjudged the skill and courage of his adversary. The Falcon was banking, climbing the while. In another moment the German would loosen a stream of lead. Then Maples smiled, as he had smiled in his bed in the hospital when he had heard of Richter's forced descent ten years before. The injured fabric might not stand the strain, but to hell with it!

He pointed the nose downward, intending to loop under the other, but instantly perceiving a wire of the

injured wing snap, he swerved suddenly and passed to the right of the Falcon who, swinging the barrel of his gun around, loosened a stream of bullets at him as he went by. Damn—he'd got it that time. Maples knew that his left arm was quite useless. He'd felt the sting of lead before. There was a haze in front of his eyes, and it seemed to him that the wires hummed as he banked and raced side by side along with the Falcon.

They were far over the sea now. If only the wings would hold a little while longer. In his mind's eye was the vision of a morning in the Somme when his French buddy, nick-named "Monsieur Oui Oui," mortally wounded, had deliberately driven the nose of his plane against the wing of his conqueror's plane. The wings of both machines had buckled, and they had plunged down together . . .

"Thanks, Frenchy," muttered Maples.

He was alongside the Falcon now, just a little in advance. Richter was swinging the murderous black barrel around. With a terrific effort Maples slammed his left foot forward on the control, and in an instant the nose of his plane swung toward the side of the Falcon. Richter, divining his desperate move, tore off his goggles and half rose from his seat in the cockpit, pulling frantically at his straps. Maples saw his face twisted in horror as the planes met with a frightful impact.

The interlocked planes seemed to waver a moment in midair. The Falcon's propeller was still revolving. A tongue of flame, and then a sudden sickening lurch as they plunged downward, turning over and over. The impact had thrown Maples half out of the cockpit. At that instant he realized that he was still clutching the butt of the gun, and with his last strength he threw himself clear of the plane, falling head downward and tearing at the string. A sudden tug—a moment of frightful suspense; then the pull under his armpits as darkness came over him.

The old lighthouse keeper had been the only spectator of the combat, and stumbling down the long spiral stairway he crawled into the dory and pulled toward the spot where the parachute, puffed out like a wrecked balloon, was visible above the water.

Maples opened his eyes to find the weather-beaten old man bending over him, regarding him silently. He wondered just how much the old lighthouse keeper had seen—or understood. There would be an inquiry—a trial, perhaps. He looked about him. He was lying in a bunk, covered with burlap that smelled of rotten fish. His arm was afame and his whole left side seemed numb, yet he was conscious of a great and abiding peace within his soul.

The Doubt was gone!

THE END

Watch for the
Spring-Summer Edition
AMAZING STORIES QUARTERLY
Out April 20th

Worlds Adrift

By Stephen G. Hale

(Continued from page 179)

been pushed back. I wanted air, space; I wanted to see our own Earth as well as Joel's! . . .

The astronomer's clock still ticks solemnly behind me. I am sitting before the telescope, my eye glued to the eyepiece. A sheet of paper lies ready to hand. I write in shorthand, talk to myself, manipulate the buttons and watch.

A short time ago my fingers faltered above the buttons. As if to lift my palsy from out of the black night came the sound of distant reverberations and the far sky became a ruddy orange. Another fire! Like a fool I waited for my doom! I was a waster of the precious seconds! My fingers dropped upon five of the white keys. A tiny bulb glowed before me for the fraction of a second. The power had flashed through the air. Up there amid the polar regions five atomic machines had begun to belch their explosive power!

"Five buttons down, Toby," I cried, "and not a tremor!"

"Double them!"

I did. "Still no effect!"

"Should there be? A rocket car—or ship—no shocks, Bob?"

The Second Earth and the Moon had just drifted into view from behind the scudding clouds. Stars began to twinkle.

"No change, Toby," and I depressed more of the buttons. I turned a lever, made the discharges continuous. More keys down! I sighted through the telescope again, checked what I saw by a glance at the other instruments.

"At last, Toby!" I shouted. "We're going! It's moving! I'm sure of it! Man alive, what have we done? More keys, Toby! Down, down with them! Your space ship is launched! There's the—see? The sun again! Our second sunset! We've turned slightly, A madman's dream come—"

I broke off, I stared, my mind reeling with a new discovery.

"Toby," I cried again, "what day of the month is this?" I swung around to consult the almanac. There was the red circle around the date. I had put it there myself. There was another like it on the next page. Toby looked, his face turning a sickly pallor. His cough came again. I looked through the telescope.

"We're mad, Toby, demented, a couple of doddering old fools!" I roared. "We're in syzygy tonight, the wrong one! But Toby—what have we done?" The question was like a moan from my lips. "We're smashing into the Moon, Toby," horror growing in my voice. "Over a hundred thousand we're going—right into the Moon! The Moon's coming between us and the Second Earth. It's coming between us and Joel! It's covering up the Second Earth gradually. The Moon, do you hear me?—the Moon! We're smashing into it! The wrong conjugation, Toby; we should have waited!"

Toby rose from his couch with a groan and stood beside me. His trembling hands clawed at me for support, while he looked through the telescope. Blood dripped upon the instrument. The clock ticked. Out-

side the animals snarled and barked and whined. Insects droned about us. One sank itself into my neck but I stood unmoved. . . . We were about to destroy a satellite, our satellite, Joel's and ours! My mind was crowded with that fact.

Toby's hands fell from me. He wavered for a moment, swaying on his feet, stood upright and spoke.

"Bob," he said, "forgive me. . . . Do. . . . Tried to—to atone but no luck," bitterly. "Going out—Bob—air—so long—" and he sought the staircase unsteadily. I caught him at the landing but too late. Toby had gone, he had left me. Tenderly I placed the lifeless body on the cot and drew the red stained sheet up over it.

I found the envelope he had given me and read the note which it contained. Its message didn't startle me.

"Toby, old scout," I whispered and my eyes felt warm and moist, "this has been a new life for you, for us. I don't care what you were in that other one"; and I destroyed the last written words of Serge Grubsnig, the mad Russian scientist! . . .

THE Moon spreads out over my portion of the heavens. Watching it intently I can see it grow larger and larger. It's less than 50,000 miles away. Spots and streaks of bright sheen visible along the edges. The lunar mountains! The high peaks are in the sun still. Everything calm and serene! One might die there in peace! Death! Oblivion! . . . But must I die? Must our project fail utterly? And there is my family!

The black keys! There's a chance yet! . . . I just pushed the master button. It controls all the other black keys. The atomic machines down below me are speaking—all at once—yet again—and again—and still once more! The ground under me heaves and I hear the earth ripping. Is it the landslide? . . . The recoil is holding the edge in place. I can see from here that the crevice is closed. One danger is over!

The telescope shows results—floating down—momentum broken by the recoils. The gravitational pull is drawing the Moon slowly closer. I am to be spared again. If nothing unforeseen happens, the Moon will land below me—in center of vertical plateau. That's where it's going! Like a plum, for size, landing on a cantaloupe. . . . The crucial moment is here! . . . Depressing more black keys—surprising control—almost touching! . . . There! As softly as falling thistledown, as lightly as dandelion seed! I have landed on the Moon! Or has the Moon landed on the Earth? . . . It doesn't matter. The Moon and this terrestrial fragment are one! . . . Toby's space ship takes on the Moon! . . . And I am alive, still alive!

The telescope shows details on the Second Earth clearly. . . . I can see South America—Brazil—Mexico—yes, there's Florida and—and Delaware Bay—and—well, I imagine—yes, that must be about where Philadelphia, the rest of it, should be! . . . A grand and glorious feeling! . . . Like coming home . . . nearer Joel. . . . Why not? . . . Only 90,000 miles away. . . .

I'll do it! . . . I'll go the rest of the way . . . take the Moon with me! . . . Ha! Ha! to light my way! . . .

I have depressed the white keys. . . . Going forward again. . . . My acceleration tremendous . . . increasing. . . . Second Earth still in line . . . no, just a trifle off . . . not much . . . I'll land in the West . . . between the Hawaiian Islands and the Mississippi. . . . I'm coming, Joel—coming!

What's that? A noise in the planetarium! . . . The radio! . . . Maybe Ottokar. . . . Shouldn't bother me now. . . . But perhaps it's Joel! . . .

It was Joel sure enough! . . . a relief to talk to him. . . . Didn't let him say a word . . . he can't stop me at the last minute with his argument. . . . I told him the Space Traveller *de luxe* was about to land. . . . No, he can't stop me. . . .

I'm coming with my little lunar lamp, ha, ha! . . .

There's something wrong! . . . Instruments must be wrong. . . . Acceleration 500—600—650 thousand and still—it's 700,000 now! . . . The white keys have stuck! . . . can't get them up. . . . The Second Earth 10,000—9,000 miles away. . . . This sweat! . . . I can't see. . . . The keys won't budge . . . I'll wreck the Second Earth. . . . No, too late! . . . Have missed Joel. . . . Second Earth a speck behind . . . acceleration a million! . . . The black keys. . . . Down with them, down. . . . No use . . . velocity too great. . . . What's that red ball? . . . It can't be! It is! It is! . . . Mars. . . . The sun's getting smaller . . . colder. . . . It just dawns on me. . . . I'm leaving the solar system . . . clear path . . . nothing in front. . . . Oh, God . . . help . . . me!

THE END

What Do You Know?

READERS of AMAZING STORIES have frequently commented upon the fact that there is more actual knowledge to be gained through reading its pages than from many a text-book. Moreover, most of the stories are written in a popular vein, making it possible for anyone to grasp important facts.

The questions which we give below are all answered see if you can answer the questions without looking for general knowledge of science.

1. What nations claim to be the birthplaces of modern chemistry? (See page 103.)
2. What place in Pennsylvania is regarded as the locality of Priestley's work? (See page 103.)
3. How may chemistry be described in respect to its scientific basis? (See page 103.)
4. Of how many elements is the matter of the earth built up? (See page 103.)
5. What element essential to life, without which element we should die in a few minutes, is present in sand and rock crystal? (See page 103.)
6. How many elements are there? (See page 103.)
7. What class of substances are formed of some of four identical elements? (See page 103.)
8. What instruments of daily use would be destroyed by the oxidation of metals? (See page 106.)
9. Why would paper money be the only available currency? (See page 107.)
10. What kind of substances are cities dependent on? (See page 109.)
11. If there were two suns of different colors, how could an eclipse be produced? (See pages 133-134.)
12. What men, father and son, were said to have flown in past ages? (See page 146.)
13. How is basaltic glass formed? (See page 155.)
14. How far is the moon from the earth? (See page 165.)
15. What does syzygy mean? (See page 166.)
16. What is the orbital velocity of the earth about the sun? (See page 167.)
17. How would you express in concise form three thousand millions of millions of millions? (See page 171.)



In this department we shall discuss, every month, topics of interest to readers. The editors invite correspondence on all subjects directly or indirectly related to the stories appearing in this magazine. In case a special personal answer is required, a nominal fee of 25c to cover time and postage is required.

A PLEASANT LETTER FOR THE EDITOR, WHOSE OCCUPATION IS TRYING TO PLEASE THE READERS

Editor, AMAZING STORIES:

Have just finished reading the January issue of AMAZING STORIES and wish to say that I am more than pleased with it.

No. 1—"Pygmalion" of the Lemurian Documents was rather disappointing. One would rather Cal-Atna had come to life. But apparently the author made his point, even though, I am not in sympathy with his view. To me, the story seemed to be in following order as to their general good qualities. "Tumithak of the Corridors"—Tanner; "The Inevitable Conflict"—Lovering; "Power"—Vincent; "No. 1 Pygmalion—Burtt.

In "Tumithak of the Corridors," Mr. Tanner has exhausted the possibilities for a novel in a short story. However, he has left the road wide open for a sequel or several sequels and I, will certainly be disappointed if he does not give us a sequel telling how Tumithak eventually led united humanity out of the corridors and conquered both the Earth and Venus; how he enticed humanity out of numberless other isolated corridors, similar to his own, etc.; and how they reduced the shelves to submissiveness destruction. I am in sympathy with the idea of the annihilation of entire populations of intelligent worlds as happens in some of our stories. To me, it is as ridiculous as the useless annihilation of entire species of animals as has happened many times since civilization enveloped the globe.

But I am in absolute sympathy with the complete subjection of tyrannous populations. There are possibilities in "Tumithak of the Corridors" for several good sequels and I hope the author will do something about it.

Furthermore, I can't see why so many writers in the "Discussions" column will insist on writing whole letters picking flaws in the illustrations, etc. To me, the main item in any magazine is its literature. If I bought A. S. for its pictures, I would never buy it and that doesn't mean that the illustrations aren't good either. They are merely unimportant. The quality of the literature is primary. I suppose these critics are object-minded and I am abstract-minded; terms I coined to make my point which makes very apt that hackneyed ex-

(Continued on page 186)

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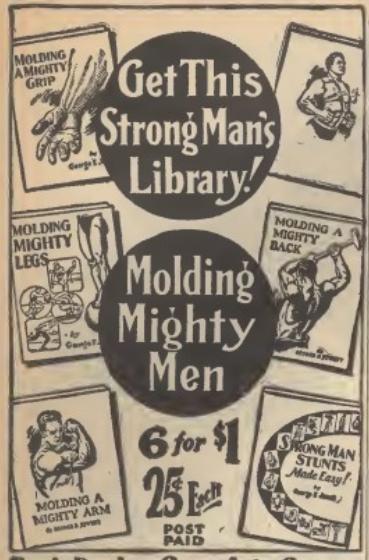
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pression, "It takes all kinds of people to make the world."

In these days of radio, airplanes and other wonderful, modern inventions, it sounds absurd to say anything is impossible, but nevertheless, I am going to confess what may seem a argument that time travel is impossible. The one time that time travel would find nothing in the past because it is the present. The past is gone. The time traveler would find nothing in the past because it is gone. The future has not yet happened. The time traveler would find nothing there for time has not yet arrived. Time traveling stories make interesting reading, but they are not to be taken seriously. Interplanetary stories are my favorites.

I would like to take issue with Mr. R. Frederick Hester as to his objections regarding "thrones," etc., in his interplanetary stories. Whether the beings of other planets have "thrones" or not, we do not know, but the human race has been under the domination of masters of various kinds and forms ever since the dawn of history and probably always will be. What is the difference? They are a chief, king, czar, etc., 1930 Mussolini, Kaisar Pasha or the American God called "Dollar." The most tyrannous tyrant that ever shaved his slaves to the point of desperation is the American Dollar. No, I am not a communist. My ancestors came to the United States three hundred years ago.

Mr. L. M. Jensen's fourth question asks if the ether is a vibration. I do not know, but I have read the theory in A. S. that all matter is merely a form of vibrations—different vibrations making different forms of matter. See Jack Williamson's "Stone from the Green Star."

Let me add my say to that of Rufus E. Bowland. Don't print any reprints. Why not sell some of the most popular stories to some publishing company and let them issue them in book form? This would solve the problem without making our magazine a repetition of the same stories over and over. I have most of the copies since June, 1931, and will sell them if anyone wants them.

Alan E. Blume commands Dr. Keller on "The Steam Shovel" and it is plausible up to the point where the author leaves the inference that "The Steam Shovel" is still wandering around in the hills which is impossible because it would stop when it ran out of fuel and if not then, it would stop when the elephants brain died of starvation.

Russell F. Jones,
Barstow, California.

(Personally, we quite admired "Tumithak of the Corridors" and are glad to read what you say about it. We hope that Mr. Tanner will give us a sequel in the future. We agree with your views of time travel, but we must admit that it gives excellent material for highly imaginative stories. We are very much amused at the way you treat the American dollar. It may shove its slaves to the point of desperation, yet curiously enough, we would all like to have more of it. We have so much to learn about the ether, that it is hardly worth our while to speculate about it, for any theory will be enormously modified in the future. It has been generally agreed that the early issues of the magazine which were characterized by many reprints, were far less interesting than when we depended principally upon original, new stories.—Editor.)

THE "ASSOCIATION OF INTERPLANETARY ENGINEERS"

Editor, AMAZING STORIES:

I read your magazine and find it very interesting. I am very interested in space flying and the like. I might as well get right down to the point. I belong to the "Association of Interplanetary Engineers." This is a group of young men who are greatly interested in Interplanetary subjects. This is an organization of boys who just want to say that they belong to the "Association of Interplanetary Engineers." This is an organization of young men who are really doing some honest work on this subject.

I will make this letter short and brief, so as not to take up so much of your time, but I want to add, that if there are any young men who are sincerely interested in Interplanetary subjects I should like them to drop me a letter telling me about themselves. Remember, this is only for people who are sincere.

If you will print this letter it may help our cause a great deal.

Van Horn Fabricius,
447 Central Avenue,
Orange, New Jersey.

(We are glad to publish your letter and we hope that it will lead to results and increase the membership of your society.—Editor)

AN INTERESTING CONTRIBUTION ON THE GENERAL FEATURES OF AMAZING STORIES

Editor, AMAZING STORIES:

Having been a reader of AMAZING STORIES for several years, I wish to make a few remarks to compliment you on the general make-up of AMAZING STORIES, and also on the stories that you are putting in it.

While some are not as good as others, still you cannot expect all to be of the same high caliber.

While some do not appeal to me at all, still it is seldom that there is not some point or idea in the poorest of them.

I sure do get a kick out of the Discussions column.

I amuses me the way some of the critics criticize; you would think that no one knew how to write or what to write except the aforementioned critic.

But since they are so good at it, why do we not see some of their writings in AMAZING STORIES?

Some of the criticisms on the other hand are fine, for they not only bring out the good and bad points of a story, but also give you some new point to think of.

Some of our critics say that this or that point in a story is impossible, or that it could not be done.

Do they ever stop to consider that the word impossible is a rather large word?

Who can say what is possible or not possible? Why can they not use their imagination just a little?

And what is our imagination?

Can you or anyone else really say that it is, or how it really functions, or has it shape or color?

If we as human beings did not have this so-called imagination, we of today would not have advanced beyond the early stages of savagery.

Therefore, I think that our writers are entitled to some freedom in the use of their imagination in writing their stories.

In my personal opinion, the best writer that you have at present, and I doubt very much that you will in a long time if ever find his equal, is none other than Edward E. Smith, Ph.D.

"Skylark of Space" and "Skylark Three" are the best that I have ever read, and I have read them several times.

Every time that I read them I find something new in them that I missed before.

Dr. Smith may, at some time, write the equal of those two stories. I sincerely hope that he does that very thing soon; but when he does that, he will know that he has accomplished something.

When you stop to analyze those two stories, and take only those events and circumstances of the plot (not the words used in the word possible), you have something very much worth while. Smith should be able to make some of our real scientists think if they are so fortunate as to read those two stories.

There is certainly a large amount of action in those two stories, while not within our grasp today, yet who can say just how long it will be before it is?

John Lange,
Mercedes, Texas.

We feel that severe criticism of his work is good for any editor who takes it in the right way. We have taken great pains in conducting the "Discussions" column to give a good quantity of letters from correspondents, which are published practically unedited and are virtually just as they were written. Thus, if these critics were to answer every query by understanding it as a story, they might well be surprised at the difficulty of the task. We quite like the way in which you put the status of the word "impossible" and the other word "imagination." Certainly, if our writers did not use imagination, the stories would suffer for it. You throw some few "brick-bats"—for a wonder they are directed not at the humble editor, but at his critics and those of the authors. We are glad to read what you say about Dr. Smith. He has made a great success. Personally he is a very delightful man, but he is a busy man in his scientific field and we cannot expect to get stories from him frequently.—Editor.)

A REMARKABLE LETTER FROM THE
AMAZING STORIES:

Editor, AMAZING STORIES:
Before reading this letter you must promise to pardon any mistakes in orthography or style, I never spoke English to an Englishman and I never wrote so long a letter in English, as I intend to do just now.

My parents are German. I was born in Argentina. I learned English at a German school in Buenos Aires. All this in order to show you what A. S. has done for me.

I ran across the first science-fiction story in a German book for boys: "Das neue Universum" Volume 22. It was as far back as 1915 or 1916, but the book must have been much older as there were no new German books obtainable in B. A. during the world war. (The book appears a volume a year and today is about volume 50.) There were two more science-fiction stories in volumes 29 and 34 (the only volumes I could get). One of these stories dealt with a wireless communication with Mars on a 12 or 15 km wave (!). I reread this particular story some months ago. Rather it is scientific for boys 12 to 15 years old, explaining in detail how the communication is established with the intelligent inhabitants of Mars by transmitting dots, and then nine, sixteen and twenty-five dots, awaiting an answer, which was expected to be: 6, 8, 10, 36, 64, 100 dots. This answer is successfully received in due time and now the symbols + — X and : are explained by further examples, then follow the value nil, the equations of the ellipse, parabola, and hyperbola, the representation of these curves by co-ordinates and finally the transmission of pictures of men and things of our world, also by co-ordinates.

After having read the above mentioned three science-fiction stories I have always tried to get more of that kind of literature. I only inspired one more story: "German," a short novel about a man experimenting with radium. He disintegrated the planet Venus and "reassembled" it there. The end is that all has been a dream during a fever caused by radium burns and the story is ruined.

About 1920 my mother presented me with "King Solomon's Mines," by Rider Haggard. I began reading English without a teacher urging me to do it. I read every book by that author dealing with Africa and Asia. Having nearly exhausted Rider Haggard, I tried other English authors subconsciously looking for science-fiction combined with adventure, but I found none. I read "Tarzan" in German translation—simply stupid. I became fond of reading in English. I regularly bought Model Engineer at the bookstand and later on subscribed to the Model Railway News, both English publications. (On this opportunity I wrote my first English letter.)

Later on I read "Radio News," "Popular Science" and "Science and Invention." In the latter, I at last found science-fiction (I did not know that word then, I called it novels dealing with the future development of science and engineering).

"The Metal Emperor" was the story I came across in "Science and Invention." After reading the advertisement of A. S. in that magazine, I raided the newsstands to find it. No mean task in those days of little circulation of "our" mag. But finally I got hold of it. After having bought some copies, always annoying the bookstand man asking for A. S., days before the mail was due. At last I decided to subscribe. . . . Month after month I swallowed A. S. as fast as I could. The difficulty in sending the money and some percent laziness (I must confess) made me let the subscription expire, but nevertheless I nearly got every copy.

This monthly exercise in English had had the result that I can express today my ideas in English in spite of the numerous infractions against the laws of grammar, of which I feel guilty.

A certain brick-throwing gentleman, who proceeded shooting in the December copy, helped me in writing this letter by sticking up as a target your authors Capt. Meek and Mr. Rice Burroughs. Only once (and I hope it shall not occur again) I left an A. S. novel unfinished. It was "Suhmicroscope." I had enough after the first five or six pages and I never tried to read "Asilo of Ulm," when I saw that it was a sequel to "Suhmicroscope." I disliked the "Drums of Tapajo's" and I am very suspicious about "Troynas" which I have not yet read. I did not like "Through the Green Prism" and "Beyond the Green Prism." I know that many of your readers appreciate your authors Capt. Meek and Mr. Hyatt Verill—I do not.

About illustrations: I do not like them! An author describes some animal, machine, etc. The reader reacts to that description, forming in his imagination a picture of that animal or machine. This picture varies with the personality, education and character of the reader. The artist, on the other hand, illustrating a certain description, forces upon the reader his idea of the described object. The artist may fail to draw what he sees in his fancy or his imagination reacts in a different manner than the reader's does. Result: the reader thinks the picture has been drawn by a poor artist. I believe only those who are unable or too lazy to follow a description do like the illustrations. . . .

Why do you mix the colors of your cover pictures like preparing salad? Why not let us have covers in three or four colors? (I admit the necessity of cover pictures in order to get new readers.) The colors must be plain and their distribution equilibrated (e.g. A. S., December), framed with black and white like the covers of "Popular Science."

I just received the February copy. I always enjoy the short stories by Dr. Keller. (Please ask that gentleman what happened to the two people supposed in the penthouse at San Francisco.)

Look out! Bricks coming! The rocks represented on the February cover look like a side scene of a stage-set.

Poor perspective in the illustration of the penthouse.

Look at the malignant, idiotic faces of the mishandled embryos which would be the highly intelligent good-natured Sages of Eros (though the author tells you they are extremely ugly, nauseating, they need not look like criminals).

Poor must dive every time the projector holds an old firearm against the planks or keel of the "Susan Carter" for Mr. Morey mounted the projector so wrong that it is impossible to aim out of the cabin window at an angle greater than ten degrees below the horizon.

Kindly throw this letter into the waste-paper basket and go on with "our" mag, as you did I today.

Hans J. Lesser,
Rio Segundo F. C. C. A. Prov. Cordoba,
Argentine Republic

(We publish your letter in great part to show what a linguist you can do. Your English is almost perfect. There are comparatively few English speaking people that could write a German letter as perfect as you wrote an English one. Incidentally, do not accept the term science-fiction as a real English word. The stories which you dislike are very popular with our readers.—EDITORS.)

A CRITIC OF FOURTEEN YEARS AGE

Editor, AMAZING STORIES:

The wonderful February AMAZING STORIES inspired me to write a letter to you telling how much my friends and I have enjoyed this issue.

For one thing, the story "Heritage of the Earth" was super-excellent. I always like a story that has a lot of science in it. A lot of the stories lately claim to be "science-fiction" but there is absolutely no science in them. These I would classify as "Weird." "The Racketeer Ray" was one with a high scientific value.

"The Pent House" was one delightful story. Keller's stories are almost always good.

Let me here congratulate Mr. Kalland on the wonderful story, "The Sages of Eros." This was one story in which interplanetary travel was involved, and yet there was not a war, and killing by ray cannons, as in most of interplanetary stories. We like these stories, but they certainly are overdone. "Troyna" was a good story, but I have read better stories by Capt. Meek.

For the improvement of our magazine as a whole, I would say that if the paper it is printed on was of better quality, it would have everything that an all-star St. mag. would hope to have. Since about four or five months ago, the stories have been getting better, and better. Certainly the editorials of Dr. Sloane are appreciated.

William Palmer,
6028 33rd Avenue,
Kenosha, Wisconsin

(Your very welcome letter shows that some of our readers do appreciate our efforts. We agree entirely with what you say about science in the stories. We are delighted to read your statement that the stories have been getting better and better and also glad that you like the opening editorials.—EDITOR.)

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THE COLORS OF THE SPECTRUM— WHAT COLOR SHOULD ULTRA-VIOLET HAVE?

Editor, AMAZING STORIES:

I am a veteran reader and never fail to find a good story in every copy. The following are my opinions. I would like to know what other readers think.

I am fairly sure that if we could see ultraviolet (which some authors have described as beautiful, but alas! too strange to describe), we would find it is red in color. As you know, the visible spectrum ranges from red to violet as follows: red, orange, yellow, green, blue, indigo, and violet. Red and yellow mix to form orange; yellow mixes with blue to form green, and blue and violet mix to form violet. You notice that in the spectrum the primary colors are always situated so that the secondary color that results from their mingling is between them. What other color than red can be so situated that its mingling with blue will produce violet?

There is one time-plot that has not been used. In it the time traveler goes into the future, finds that a catastrophe has taken place, goes back into the past and changes the course of events, and later go back into the future and discover that they were successful, that the terrible event never took place.

I hope you will print the "Skylarks" in book form with original illustrations. Dr. Smith is my favorite author. His first story, the Skylark serial, was a great success, but I fear that popular demand will force him to make carbon copies of the original, or I should say his initial success. I feel sure he could write stories with a different plot and new characters with equal success.

I think the hero of "Awlo of Ulm" would have crushed Ulm under his machine. I'd suggest his going up in a plane before reducing his size. Now how about the microscopic people? They would be smaller than moths, and the molecular action of the air would not permit them to stand on the ground. They would be carried high in the air with the slightest breeze, even if they were made of lead. The particles of the air would be too large for them to breathe. The story was a fantasy but might have been more convincing, had these minor details been considered.

Now as to invisibility. I believe that no body can be made invisible by the application of ultraviolet colored paint, because ultraviolet is simply black to us. Many things that are black may be ultraviolet in color. They would appear white in a photograph taken by ultraviolet light.

I am sure an object can travel faster than light. If the object can't connect with mass, then its density is equal to that of neutrons.

Mr. Campbell made an error when he stated in the discussions column that an object's speed could not increase any further when it had attained infinite weight.

He forgot that although the body would have attained infinite density at the speed of light, at the same time it would have infinitesimal mass (Volume). In other words, the weight should remain constant.

Here is another idea for your authors. Eliminate the inertia of the cosmic flier and the body can attain infinite speed with negligible power. Then he removes his inertia and the ship will continue in its infinite flight with further application of power. If he wants to play safe, he will not restore the inertia; then if he should collide with anything, there will be no shock. The power required to eliminate the inertia might be equal to the power necessary to attain that speed without it, according to Newton's law on the conservation of energy.

Some writers conceive of time as being a succession of still pictures which can be reviewed at will by the time traveler. Then we would see us, not as we see ourselves, but as solid walls winding back and forth mingling and crossing with other walls that are people and vehicles in motion.

I like the discussions just as much as the rest of the magazine. I think the covers are fine and I would like to explain to those who complain about the six-armed fighting suits, etc., that the purpose of the cover is not to illustrate so much as to decorate. It is simply more convenient for the artist to use one of the stories of the month as a basis. As for their performing the function of decoration, I'd say, "They certainly do."

Charles Schneeman,
1461 East 63rd Street,
Brooklyn, New York.

You will have no trouble in finding out what at least a proportion of our readers think about things. It sometimes seems that in the spectrum, colors' share the blame for the curse of the world. The unfortunate people of Ulm have had much sympathy from writers in our discussions columns. All we can say is that the "Awlo of Ulm" is a mighty good story, and as you say, was a fantasy.—Ezraos.)

EVOLUTION AND HEREDITY. NEO-DARWINISM — TELEPATHY. A RATHER PROFOUND LETTER

Editor, AMAZING STORIES:

The letter by Charles Campbell in the March Monthly quotes Dr. Hudson that evolution is the result of an instinct for improvement (of one's offspring?). This is essentially the cause suggested by Lamarck, though he supplemented it with the notion of selection acquired characteristics. So far, no evidence has been adduced for the first and very little for the second suggestion.

While no positive statements may be made with entire confidence from negative evidence, still it may be called in to strengthen positive evidence. So: We may safely say that all but a negligible amount of heredity is passed on through the chromosomes; thus the only way of changing this heredity is by changing the chromosomes (subdivisions of chromosomes—are the cytological carriers of the geneticist's "genes"); and so far the only known method of changing chromosomes is by means of ionizing radiations (free electrons). Apparently the impact of the electron causes a rearrangement of the atoms in the exceedingly complex molecule (or molecules) making up the chromosome. X-rays are effective only to the extent that they set up ionizing radiations and there is some slight evidence that heat affects the chromosomes, though its action is more limited as perhaps only some of the molecules (compounds) are affected by it.

The variations in heredity (mutations) are thus dependent on chance and upon the differing resistances of the different compounds to the radiations having been born upon them.

One mutation exists, however, in its fate depends upon its survival value: A trait with a positive survival value tends to be extended to a larger proportion of the population each generation until it is possessed by all available members of the species. (Thus geographical species grow up.) Traits with neither positive nor negative survival value spread more slowly until half the population has them. Traits with negative survival value ("unfit") tend to decrease until none of the population exhibits them. The trouble is that most undesirable traits are *recessive* (must be contributed by both parents and so have a pretty good foothold before any individual shows them). Recessive characters may be passed on by "carriers" who are not themselves affected, having at half a dose themselves.

The mutation and selection are the basic themes in modern neo-Darwinism which is beyond Darwinism more than that was beyond Lamarckianism.

Since no work has been done with the harder rays such as Taine uses in "Seeds of Life," no one can say they would not have the effect he postulates of altering the chromosomes to produce definite compounds and so definite results. But these results due lack of selection would hardly lie in the exact center of future evolution, though the super-stavisms might be ancestral forms. It is hardly likely that the reptilian ancestors of either birds or mammals were even as large as a cat, possibly as a mouse.

This may seem abstruse, but more abstruse dissertations on physics and other sciences have appeared in the Discussions.

Mr. Campbell's remarks on telepathy are odd. First, they are so dogmatic on a subject which is probably less known than any other. For one thing it is not at all certain that there is any such thing as a "soul." Certainly very few if any persons, can communicate by telepathy, and it may just as well result as non-communication which has not yet reached the bulk of the population. As a means of communication, it may still be in process of making. It is reported that some once remarked that if the Good Lord had intended us to educate He'd have us born educated.

Admittedly Mr. Hehr's last sentence on tungsten was misleading, but as I understand the etymologies and as he seems to intend to say, Wolframium ores are heavy stone which used to cause much trouble to the miners and had to be separated from the other ores. Hence the German miners called it *Wolfram*. They might

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have called it *rubber-um* with the same significance. The Swedish miners named it after its high specific weight ($W_O = 7.16$; $H_2O = 1$). But I don't agree with him that anything can resolve electrons into atoms.

"It is only too true that certain items are ignored by competent scientists with reason, and others are perched upon by feature-writers and other professional imaginators, who build up a body of "literature" which may or may not point the wrong way, usually creates the wrong impression, and is always lapped up by the public, which is only too eager to get sugar-coated pills of anything labeled SCIENCE. And the larger the capitals, usually, the smaller the science."

"A Voice Across the Years" was very good, but some of the footnotes suggest that the scientist wrote the text and the newspaperman wrote the notes.

I would like to direct the attention of Eastbay readers to the Eastbay Scientific Association, a branch of the International Scientific Association which was founded (as the Scientific Correspondence Club) through the columns of this magazine.

Clifton Ambury,
Secretary-Treasurer,
Eastbay Scientific Association,
2216 Ward St.,
Berkeley, Calif.

(This is another letter which speaks for itself. We are glad to get such letters as yours, whose merit is shown in the fact that it really requires no answer and no comment. Of course telepathy is virtually unknown. That is to say, that we practically know nothing about it and are certainly free to doubt that there is any such thing, but it fits pretty well in some of the stories to give at least a theory, if a fictitious one, for the intercourse of strange beings with different languages. We are sure that your final paragraph will give you pleasure. As we have stated elsewhere, the various derivations of the word wolfman—as given by the authorities—are very weak. We think that the insertion of the "u" in the last syllable gets some consistency out of a puzzling bit of etymology.—EDITOR.)

A CHARMING LETTER FROM A YOUNG GIRL

Editor, AMAZING STORIES:

I have been a reader of your magazine off and on for the past two years. I say off and on as I have not always been able to secure copies, but ever since I picked up the July, 1930, copy, yours has been my favorite magazine.

I am a young girl, only fifteen, but I have always been interested in science, especially archeology. Of all the stories I have read in A. S. the ones I enjoyed the most are as follows:

"Paradox +," by Charles Clowley; "Anachronism," by Charles Clowley; "Message from Space," by David M. Speaker; "The Man from the Moon," by Otis Adelbert Kline; "The Drums of Tapajos," by Capt. S. P. Meek; "The Purple Plague," by Russell Hayes; "The Valley of Titans," by J. A. Eshbach; "Through the Vibrations," by Schuyler Miller; "Power," by Hari Vincent; "Tumithak of the Corridors," by Charles R. Tanner; "Pirates of Space," by B. X. Barry; "Luvinium," by A. McKenzie; "The Stone from the Green Star," by Jack Williamson.

I think that Captain Meek is just about the best author and the new serial "Troyana" looks just as good, if not better than, "Drums of Tapajos" and that's saying something.

The Fantasy issue was pretty good and I especially liked "The Heritage of the Earth." I like Morey's illustrations, but for heaven's sake, what has become of Wesso and Paul, to say nothing of some others.

In closing, I wish to state that AMAZING STORIES is one grand magazine. Just keep up the good work!

Jean Parker,
309 West 89th Street,
New York City

(Nothing pleases the Editor in a higher degree than a nice letter from a young girl and here we have a fifteen year old young lady, interested in science, who gives us a list of stories that have pleased her the most. It is interesting to run over them and see the well known names. Mr. Wesso, of whom you inquire, draws the illustrations in AMAZING STORIES Quarterly and is doing excellent work.—EDITOR.)

A LETTER ABOUT THE WRITERS OF DISCUSSIONS. CAPTAIN MEEK'S REJOINDER

Editor, AMAZING STORIES:

This is my second letter to you, and my object is the same as my first, that is, to let off steam. I have read the "Discussions" column of the March issue and I will say that I got several good "niffs" out of the letters.

Poor Mr. Branch. Two letters condemning him, and then, to cap it all, Capt. Meek takes one of his sarcasms and makes it into a compliment to himself (Meek). I'm glad to see Capt. Meek's letter and more glad to see "Troyana," though I started reading it the wrong way. I started the story in the first issue of the mag. and now I've gone and read the second installment. Now I've got to wait a whole month to finish it. Last summer I was sort of fed up on scientificism and didn't read any of the installments of the "Spacehounds of IPC" until I had all three. I believe the story went better with me that way. "Spacehounds," in my humble estimation, was better than "Skylark Three." I have just read "Star Spangled Space," so I can't compare the three stories.

I believe the Discussions are one of the best parts of the magazine, this is, outside the stories and Dr. Sloane's editorials. Anyway, they're one of the best parts, and I read everything in it and "laugh," groan, or curse, depending upon the mood.

Speaking of the editorials, I think Dr. Sloane must have read my mind, for I had intended writing to the Discussion columns to ask a question when he answered it in one of his editorials. The one which stated that the planets of the solar system lie practically all in one plane, there being only 4 degrees variance in one of the planets, Mercury, I believe. Here's some likes and dislikes: I think Jack Williamson's "Green Girl" the best I've read in his "The Prince of Space," I don't think the planet Mars can be destroyed without wrecking the balance of the solar system. Then "The Stone From the Green Star" I believe that a million years in the future the human race (if there is any then) would have evolved considerably from the present man. His stories are plenty good, though.

I'd like to see more of Schuyler Miller's work in A. S. I liked his "The Arsenic Horror," "Cleon of Yrdzal" left me wondering what it was all about, as I read it somewhat hastily. Sometime when I feel strong and courageous, I'm going to re-read it, slowly.

Ronald Miller,
South English, Iowa.

(We are always glad to hear that a reader considers the "Discussions" the best part of the magazine. It is interesting to see how they affect you, for there certainly is a great variety in the letters.—EDITOR.)

THE FEBRUARY ISSUE

Editor, AMAZING STORIES:

The February issue was a knock-out. Before I go further I must compliment you on the excellence of Morey's cover illustration. It looked almost like one of Paul's covers. The green on the top of the picture was grand. I am glad to see six stories in the issue. "Troyana" was fine and getting better as it neared the end. I think the authors of late are harping too much on classes of the future and the colors they wear (Wearers of the Blue, Black Robes, Wearers of the Purple, the Gray-clad workers, etc.). The Keller story, as usual, was good. I'm getting so used to Keller's O. Henry endings that I could write them off like the back of my hand. "The Sages of Eros" was also good, but readable. The "Racketeer Ray" was a departure from the usual variety of stories, and I consider it good. Murry Leinster's stories are always very interesting. Neil R. Jones' narrative was great. I consider him your best author. Certainly this story bears out my thinking he is. There was plenty of action, and Prof. Jameson was in novel adventures. The theory of creatures in a different plane is quite plausible. "The Heritage of the Earth" was good literature. The editorial, "The Brownian Movement" was very interesting.

Louis Adessa,
18710 Wyoming Avenue,
Hollis, New York

(It is a pleasure at last to find Morey's work on the covers appreciated. He is constantly doing better work. It requires considerable experience to get a cover perfect as regards color contrasts. He is making great developments in that line. And in the opinion of many, Morey's covers are superior to Paul's—artistically, certainly.—EDITOR.)

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magazine. I wonder if you have noticed that our old favorite writers keep supplying us with stories. We refer to such authors as Dr. Keller, Dr. Breuer, Capt. Meek and many others. Harl Vincent is a favorite with us, even if he is fond of the pugilistic blow on the chin of an adversary. We are glad that you have concluded that you like the "Drums of Tapajos," the sequel is extremely good too.—EDITOR.

A LETTER FROM A CHEMICAL STUDENT

Editor, AMAZING STORIES:

It has been some time since I have graced you by my correspondence.

I am taking the pleasure of dropping you a line or more, so as to inform you I am still scrutinizing the scientific periodicals in search of profound interest, in matters that may elevate my knowledge to a more advanced degree.

In recent issues of AMAZING STORIES Magazine, I delighted in your chronology on "The Brownian Movement" (Feb. edition).

The March edition of the same magazine, caught me aghast, on looking to the editorial page, entitled "The Beginning of Chemistry," there I saw an answer to one of my first lessons about the candle, "the loss in weight" after burning and why. While on the subject of chemistry, I must say I had poor luck in obtaining what I wanted; I could not get into the chemical laboratories, at Edgewood Arsenal, at Edgewood, Maryland, the only reason for it, as far as I can say is, that probably I did not have the support I should have had, unless I had carried the affair to extremes.

At any rate I am still devoted to matters that pertain only to chemistry. I will not give up nosing into my books or other books containing studies on chemistry. Some day I may accomplish a deal, but I need a practical experience. I will continue on, with the hope that my time in the future will come.

On closing my letter, I will say I greatly enjoy reading your articles, as they are very substantial.

Cornelius Mallery,
P. O. Box 317,
Aberdeen, Maryland

(Some of these days we may have the pleasure of hearing of some of your achievements in the chemical work of the government. It would be a personal delight to us to know that this had taken place.—EDITOR.)

A NICE GOSSIPING LETTER ABOUT AMAZING STORIES AND ITS CRITICS

Editor, AMAZING STORIES:

I have finished reading your latest issue, the March. Say, that cover's a pip. The best one I've seen since the January, 1931 issue. It really looks "Amazing!"

Next I turned to your Editorial on "The Beginning of Chemistry." I like your editorials immensely, because they are instructive as well as interesting. Once in a while you repeat yourself, but not often!

Concerning "The Cities of Ardathian"; is this story a sequel to the "Machine-men of Ardathian"? If it is, he made many mistakes in the synchronization of the two stories, nevertheless I liked the story. I was rather surprised when Jan didn't succeed in freeing the Unlings; the hero usually succeeds in doing whatever he wishes. The transformation of Rocca, the villain, was startling;

I was rather surprised at a discrepancy in "The Amir's Magic." The author states that the bee stung the horse and then returned to the Assassin Chief. I was always sure that a bee's sting is barbed and when a bee stings an enemy the barbs stick in its flesh, causing the stinger to be withdrawn from the body of the victim killing the bee. Now, I wonder whether the author had the bee return to the Amir for effect!

I liked the "Amir's Magic" because it was interestingly written and full of action.

"The Light from Infinity" was inspiring. The author states that according to the theory one second of the Supra-world's time would be equal to a 1,000,000,000 of earth-time, the captives remain in the Supra-world for almost a half hour, but when they return to Luna only a few weeks earth-time has elapsed? Why? Naturally the writer had to save the earth, but why at the cost of his theory?

Tell Captain S. P. Meek that I'm enjoying "Troyana." Will you also ask him if there is not another lost-civilization beneath that of the Atlanteans. I think it would be rather simple to write another story, and to have the

lost-civilization of Mu found beneath that of the Atlanteans. The fact of two highly progressive civilizations settled in one place, one on top of the other without finding any trace of the other is rather—shall I say unbelievable. Anyhow, I'm enjoying his tale.

The "Lemurian Documents" are interesting. Will you ask Burtt to write enough of them to supply at least one a month for the next thousand years? Please.

I have the same opinion as Mr. Ackerman on the short story question.

As yet, I haven't read "The Degravitator" but I hope to.

I think many of the letters are interesting, still more highly amusing, and others absolutely temper-raising.

In looking over the book reviews by Brandt and yourself I noticed the story "Tarzan the Invincible." Since I am a "Tarzan Fan," I was interested immediately. I have not read that story yet, but I will as soon as I get a chance.

JAMES McCRAE,
7024 Vandyke Street,
Philadelphia, Penna.

(To carry out the sequence of scientific editorials, repetition may be unavoidable. The effort in the few chemical editorials which we have given has been to picture practical working chemistry rather than the modern studies of the atom. About Jan and the Unlings, we can only say that in this bad world heroes too often fall in their efforts at improving the state of humanity. The Amir's bee, we suppose, should really have lost his sting. You also find fault with "Light from Infinity." The "Lemurian Documents" are more or less an innovation and have been very highly appreciated.—EDITOR.)

Writers! ATTENTION!

Editor, AMAZING STORIES:

I have been following, with much interest, the stories in your magazine and believe you are pioneering in a new field of Literature or of Science and Literature of very great promise and I should like to help "the good work along."

Many years ago, when quite a young man, a student of Science and the Arts of Construction, I was captured and fascinated by the stories of Jules Verne—the most broadly entertaining writer that the world has ever known. But—I was not reading for entertainment alone; I was in pursuit of knowledge as well—and I found it there, that clear, precise knowledge we call, Scientific, and the more I studied the facts, the more I became convinced that they went beyond the grasp of a student and writer of fiction.

It required several years of study and investigation to develop the fact, that the great amount of clear, positive and accurate scientific knowledge contained in "Twenty Thousand Leagues Under the Sea" was furnished by Robert Fulton, who, besides building the first Steamboat, *Claveron*, in this country, built and operated a submarine for the French Government and operated it against the English Fleet off the coast of France.

And what has this to do with AMAZING STORIES?

Well, the writer of this letter has spent a lifetime in contact with and directing Engineering Construction, much of which has been on the outer edge or firing line of Human Progress and I have been privileged to look into "The Future" and I feel sure that if some of these "Glimpses of the Future" were translated into that "Marvel of the Ages Picture Language," by which all men even the blind are made to see them, I believe there would be something more than a possibility that you might find another Jules Verne.

As a related and old fact, that would possibly warrant the writer in assuming that he might possibly play the obscure part of R. Fulton, I might submit that when in the World's War the "Menace of the Submarine" became of supreme importance; our Government appointed two outstanding Engineers to meet the situation and then asked them to pick a third, and they picked me.

In the same spirit, for the "Entertainment and Progress of Humanity" might I request you to refer me to one of your contributing writers with whom I could discuss this subject.

William T. Donnelly,
112 Idon Avenue,
Pelham Manor, N. Y.

(This letter is a tribute to Robert Fulton. We have always felt that Jules Verne was

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original in his description of the *Nastillus*, but still it may be perfectly fair to give some of the credit to Robert Fulton for what Jules Verne put into and utilized in his "Twenty Thousand Leagues Under the Sea." As regards referring you to one of our writers, we think your letter will speak for itself and will excite the interest of some of our friends. You will notice that we give their names and addresses always so perhaps you can pick out one who will meet your ideas. Remember, also, that Jules Verne drove his boat by electricity—Fulton used man-power.—EDITOR)

best magazine to be found. Since then I have purchased it nearly every month.

The thing that persuaded me to write was B. J. K.'s letter in the October issue. In it he said that the covers on the first issues of A. S. were much better than the present covers. I think he is very much mistaken. A friend of mine has back numbers of A. S. from 1927 and when I saw the colored illustrations I had never seen such an improvement in magazine covers. The covers of the 1927-1928 issues could never be put in the class that the present covers are in. The cover of the October issue of 1931 is unusually well done. It is so real that you think you beside the space-ship. I compliment Leo Marcy on his good work.

Now I want to tell you the stories I liked very much. "Skylark Three"—very good. "Spacebound of IPC"—very good. "Raid of the Marcur"—"Superman"—good. "The Burning Swamp"—"very good; ought to have a sequel. "Submicroscopic"—"Awe of Ultim"—very good—more stories by this author would be given a hearty welcome. "Stone from the Green Star"—good so far. "The Jameson Satellite"—was particularly good. Don't you think it would be good to have a sequel containing the adventures of Prof. Jameson among the Machine Men of Zor?

Victor M. Turner,
604 West 114th St.,
New York City, N. Y.

(Despite the many unfavorable letters which we have recently published in the Discussions Columns, there have been numerous commendatory ones which we have received. We are glad you think our covers have improved since 1927. Soon we hope to comply with the consistent demands of many of our older and more sensitive, or shall we say, fastidious readers, and make still further improvements. Watch for them.—EDITOR)

THE FEBRUARY ISSUE, AUTHORS AND ARTISTS

Editor, AMAZING STORIES:

The February issue of AMAZING STORIES is the best number you have published for some months.

"Troyana," by Capt. S. P. Meek is a story I have been waiting to ever since "The Drums of Tapajos" was published. The first part was excellent and I am impatiently awaiting the forthcoming instalments.

Murray Leinster has always been a favorite of mine. He is exceptionally good at science-fiction stories as shown by "The Racketeer Ray" and others.

You are right. "The Planet of the Double Sun" is better than the original story. The ending leaves an opening for another sequel. Possibly Professor Jameon can, in some way, come in contact with humans again, and once more have a flesh and blood body.

"The Sages of Eros," by a new author was a very good interplanetary adventure story.

I hope that Harlen S. Aldinger will continue to write stories for our magazine as interesting as "The Heritage of the Earth."

I have no comment to make on "The Pent House." I wish Dr. Keller could have a story in every issue of AMAZING STORIES.

I suppose you expect me to jump on Morey's illustrations again. You will probably be surprised to know that I liked them. Morey can be good at times, also just the opposite. His cover on the February issue was more colorful than is usually the case. Colorful covers attract the eye.

AMAZING STORIES discovered Wesso as a science-fiction artist. Wesso is very popular as such. Since you seem to like Wesso yourself, why do you not let him do more illustrating for the monthly? At least a cover every other month besides drawings.

Jack Darrow,
4225 N. Spaulding Avenue,
Chicago, Ill.

(In our opinion the names of the authors of the stories in our February issue, tell what it is. Captain Meek's sequel to his "Drums of Tapajos," we feel, is extremely good and quite fills the bill. We will see what will happen to Prof. Jameon; you seem to suggest the propriety of a sequel, which we hope will come. A good artist is always supposed to be temperamental and his work is liable, therefore, to vary in merit, but we feel that Morey is constantly doing better and better science-fiction illustrations. His ability as an artist is unquestionable it seems to us.—EDITOR)

A NICE LETTER, AND WELL WRITTEN, FROM A YOUNG READER

Editor, AMAZING STORIES:

Upon looking in "Discussions" I saw letters from several boys of my own age, so I took the privilege of writing to you myself. One night a little over a year ago I went around to the Stationery Store because I had nothing to read and I was hoping to get a good magazine. At last I found one with a most interesting cover, a one-eyed man fleeing from a green sphere. I bought it and ran home as fast as I could and read one story in the magazine. The magazine was AMAZING STORIES and I decided it was the

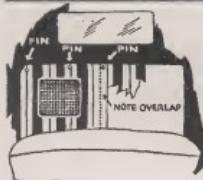
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